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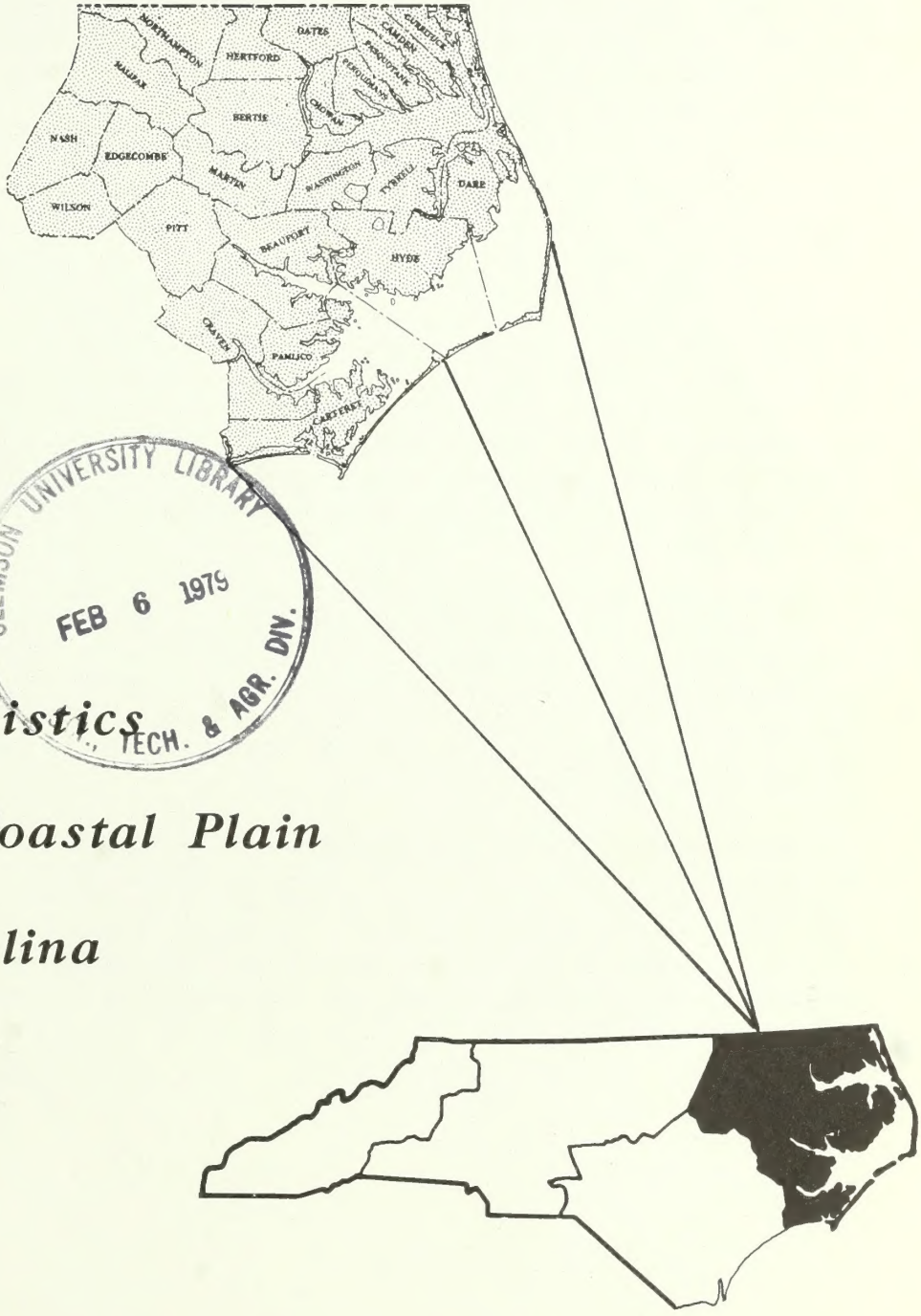
USDA Forest Service Resource Bulletin SE-30 September 1974



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Forest Statistics for the Northern Coastal Plain of North Carolina 1974

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Northern Coastal Plain of North Carolina. The inventory was started in July 1973 and completed in May 1974. Three previous inventories, completed in 1937, 1955, and 1963, provide statistics for measuring changes and trends over the past 37 years. In this report, the primary emphasis is on the changes and trends since 1963.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 23-county area covered by this report is one of four survey units in North Carolina. A comparable report, "Forest Statistics for the Southern Coastal Plain of North Carolina, 1973," USDA Forest Service Resource Bulletin SE-26, was issued in January 1974. Similar reports for the other two units will be issued as the inventory progresses. When completed, this inventory will provide updated statistics on the timber resource for all of North Carolina.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the North Carolina Forest Service of the State Department of Natural and Economic Resources and by the Weyerhaeuser Company in the collection of the field data. Appreciation is also expressed for the excellent cooperation of other public agencies and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Northern Coastal Plain of North Carolina
1974

by
Richard L. Welch, Resource Analyst
and
Herbert A. Knight, Resource Analyst

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HIGHLIGHTS

Since 1963 in the Northern Coastal Plain of North Carolina--

--area of commercial forest land has decreased by 137,500 acres, or more than 3 percent. Some 173,300 acres of commercial forest were diverted to other land uses, while only 35,800 acres of new forest were added. Well over half of the diversion was to agricultural use, primarily new cropland established in the counties south of Albemarle Sound. Altogether, 4.1 million acres, or 61 percent of the total land area, were classified as commercial forest.

--both the areas of commercial forest land owned by farmers and forest industries have declined by 15 percent or more. The decline in farmer-owned woodland was widespread, whereas most of the industry loss is attributed to a single land transaction involving a major wood-using company. Area of commercial forest land owned by other private owners increased from slightly over 1.0 to 1.3 million acres, or by 28 percent. The acreage of publicly owned forest land, which accounts for less than 5 percent of the total, has changed little.

--more than 43 percent of the land now classified as commercial forest has been treated or significantly disturbed. More than 800,000 of these acres were harvested, and some 200,000 harvested acres were subsequently artificially regenerated. Altogether, only about 260,000 acres were artificially regenerated over the 11-year period, and more than 90 percent of this tree planting was on forest-industry lands. In addition to the acres harvested or artificially regenerated, almost 700,000 acres experienced either thinning, stand improvement, drainage, or site preparation. Finally, about 225,000 acres untreated by man were significantly disturbed by insects, diseases, wildfire, or other damaging agents.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 67 to 73 square feet per acre of commercial forest land. This high average stand density is attributed in part to the fact that bottomland hardwood stands, which are often densely stocked, occupy almost 28 percent of the commercial forest. Nevertheless, stocking has increased, and only 20 percent of the commercial forest is less than 60 percent stocked with growing-stock trees. Area occupied by sawtimber stands has decreased by a million acres; therefore, most of the stocking increase has been in poletimber and sapling and seedling stands.

--volume of softwood growing stock has decreased by almost 0.8 billion cubic feet, or 3 percent, because of a marked increase in timber removals in recent years. Between 1955 and 1963, the softwood inventory had increased by almost 11 percent. This turnabout is highly significant in that it has occurred extensively across most

counties, several species, and most diameter classes. Volume of loblolly pine, the area's most important timber species, was down almost 9 percent. Percentage volume reductions in cypress and shortleaf pine were even greater. Volume of all other softwood species was up, with most of the gain in pond pine. By diameter class, practically all the gain was in the 6- and 8-inch classes. Volume of softwood sawtimber has declined from 11.3 to 10.7 billion board feet, or by more than 5 percent.

--volume of hardwood growing stock has increased from 2.9 to 3.1 billion cubic feet, or by 7 percent. This was about the same rate of increase that occurred between 1955 and 1963. Although the hardwood situation is somewhat better than that described for softwood, some of its trends are also negative. For example, volume of blackgum and tupelo was down by 11 percent, and volume in trees 15.0 inches d.b.h. and larger was down by 5 percent when all hardwood species were grouped. In fact, the volume of hardwood sawtimber, which had increased by 3 percent between 1955 and 1963, has barely held its own at 8.5 billion board feet. Distribution of the hardwood volume has shifted noticeably to smaller trees and to such species as oak and yellow-poplar.

In 1973--

--net growth of growing stock totaled 231 million cubic feet and averaged 56 cubic feet per acre of commercial forest land. Although annual growth increased a healthy 29 percent since the previous survey, it has not kept pace with the increase in softwood removals in recent years. Slightly over half of the growth was hardwood; yet, 60 percent of the volume removed was softwood. As a result, removals of softwood growing stock exceeded growth by 19 percent in 1973. By ownership class, 17 percent of the growth occurred on lands owned or leased by forest industries, 79 percent on other private lands, and the remaining 4 percent on public lands. Across all species and ownership classes, the net growth included 881 million board feet of sawtimber.

--removals of growing stock totaled 228 million cubic feet and included 938 million board feet of sawtimber. This means that annual removals have increased by more than 50 percent since the previous survey. By ownership class, 34 percent of the removals were from lands owned or leased by forest industries, 65 percent from other private lands, and only about 1 percent from public lands. Although the overcut of softwood was greatest on industry lands, it also occurred to a lesser extent on farm woodlands. Altogether, softwood removals exceeded net growth in 15 of the 23 counties.

--mortality of growing stock totaled 37 million cubic feet, which is less than two-thirds of the loss determined in the previous survey. Nevertheless, mortality in 1973 reduced the gross growth by almost 14 percent. By species group, 56 percent of the mortality was softwood. Total mortality included 92 million board feet of sawtimber.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily for States and Survey Units. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 23,588 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 2,502 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 1,493 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees at 22 sample locations in the Northern Coastal Plain of North Carolina, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 32 active cutting operations to provide utilization factors for product and species groups and to supplement the standing tree-volume study.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 1,461 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	1.17
Per billion cubic feet of growing stock	5.40
Per billion cubic feet of net annual growth	1.02
Per billion cubic feet of annual removals	2.62

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
	SAMPLING ERROR[2]			
BEAUFORT	1.71	8.19	7.93	14.32
BERTIE	1.60	7.47	6.97	16.69
CAMDEN	3.79	13.26	13.18	41.03
CARTERET	1.96	11.50	10.89	29.84
CHOWAN	4.31	16.74	14.06	27.53
CRAVEN	1.28	9.25	9.81	20.31
CURRITUCK	3.64	13.50	13.35	66.82
DARE	5.15	10.77	11.78	58.76
EDGECOMBE	2.30	8.92	8.54	26.85
GATES	1.66	12.17	9.13	31.86
HALIFAX	1.51	7.71	6.68	21.20
HERTFORD	2.11	10.94	9.87	19.85
HYDE	5.87	9.90	9.54	30.95
MARTIN	1.84	9.29	10.25	23.73
NASH	1.87	8.26	9.07	20.29
NORTHAMPTON	1.71	9.40	8.42	18.00
PAMLICO	3.03	11.52	11.79	26.20
PASQUOTANK	6.12	16.48	14.57	40.92
PERQUIMANS	3.11	14.67	15.67	27.14
PITT	2.55	10.84	9.96	21.09
TYRRELL	1.73	10.22	11.00	52.81
WASHINGTON	4.36	13.70	14.99	24.31
WILSON	3.29	9.94	10.01	37.95
UNIT TOTAL	0.57	2.23	2.13	5.49

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height (4½ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.5	61.0	68.2	60.0
8	68.5	68.1	76.0	68.4
10	73.5	73.1	81.4	73.4
12	76.8	76.7	85.2	76.4
14	79.2	79.4	88.2	78.4
16	80.9	81.6	90.4	79.8
18	82.3	83.3	92.3	80.8
20	83.3	84.8	93.8	81.5
22	84.0	86.0	95.1	82.1
24+	84.7	87.7	97.9	83.2
AVERAGE	74.9	75.4	86.0	74.0

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1974*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
BEAUFORT	528,640	337,745	337,745	--	--	190,895
BERTIE	446,720	319,754	319,754	--	--	126,966
CAMDEN	152,960	97,680	97,680	--	--	55,280
CARTERET	343,040	236,936	231,823	4,858	255	106,104
CHOWAN	110,720	58,099	58,099	--	--	52,621
CRAVEN	447,360	333,361	333,361	--	--	113,999
CURRITUCK	157,440	79,181	77,876	1,305	--	78,259
DARE	250,240	175,868	156,426	18,635	807	74,372
EDGECOMBE	326,400	153,397	153,397	--	--	173,003
GATES	215,680	156,206	156,206	--	--	59,474
HALIFAX	460,814	277,185	277,185	--	--	183,629
HERTFORD	225,920	145,722	145,722	--	--	80,198
HYDE	392,320	245,536	244,864	672	--	146,784
MARTIN	291,200	188,452	188,452	--	--	102,748
NASH	346,710	182,616	182,616	--	--	164,094
NORTHAMPTON	345,732	210,029	210,029	--	--	135,703
PAMLICO	220,800	148,471	147,115	1,356	--	72,329
PASQUOTANK	145,920	72,178	72,178	--	--	73,742
PERQUIMANS	157,440	86,672	86,672	--	--	70,768
PITT	419,200	198,825	198,825	--	--	220,375
TYRRELL	249,600	216,555	213,411	2,605	539	33,045
WASHINGTON	217,242	121,358	116,462	4,741	155	95,884
WILSON	240,000	104,481	104,481	--	--	135,519
TOTAL	6,692,098	4,146,307	4,110,379	34,172	1,756	2,545,791

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 57,409 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY BUREAU OF THE CENSUS AS LAND.

TABLE 1. AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1974

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY[1]	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
				ACRES					
BEAUFORT	197,745	—	—	3,157	60	155,760	11[illegible],039	13,734	45,995
BERTIE	210,794	—	—	173	126	85,447	1[illegible],365	9,280	72,254
CAMDEN	37,690	—	104	—	—	13,650	3[illegible],403	24,365	21,659
CARTERET	83,993	34,440	9,340	26	—	51,381	14,706	1,505	42,916
CHOWAN	56,008	—	—	—	—	10,711	[illegible],401	2,493	14,904
CRAVEN	122,351	24,130	3,780	—	80	38,395	104,133	16,499	52,746
CURRITUCK	72,876	—	9,919	7,453	44	11,130	[illegible],406	—	31,631
DARE	156,426	—	—	—	—	—	—	—	156,426
DESLCOMBE	183,[illegible]	—	—	621	22	3,647	120,648	—	26,159
GATES	156,208	—	—	—	—	83,749	5[illegible],540	—	29,518
HALIFAX	379,135	—	27	1,877	142	40,341	170,647	2,709	60,736
HERTFORD	146,[illegible]	—	—	80	82	31,[illegible]	[illegible],040	2,752	34,382
HYDE	244,[illegible]	—	14,158	18,850	—	36,[illegible]	46,468	82,613	49,048
MARTIN	188,452	—	—	—	130	58,786	100,383	1,878	17,272
NASH	248,[illegible]	—	—	40	30	[illegible],304	120,162	9,014	48,056
NORTHAMPTON	210,023	—	—	1,206	13	19,203	125,727	—	63,880
PAMLICO	147,[illegible]	—	—	1,000	—	35,868	30,566	19,504	57,939
PASQUOTANK	[illegible],178	—	15	207	347	31,226	82,716	2,524	15,143
PERQUIMANS	86,[illegible]	—	—	—	70	21,712	48,667	2,704	13,019
PITT	398,895	—	—	50	362	28,165	140,038	9,804	22,405
TYRRELL	313,411	—	—	—	—	39,429	17,398	[illegible],800	150,785
WASHINGTON	116,462	—	8,264	1,096	104	41,689	33,961	7,848	23,514
WILSON	104,491	—	—	—	754	1,469	85,693	—	16,068
TOTAL	4,110,378	108,679	38,458	29,846	2,476	899,904	1,698,512	265,106	1,067,358

[1] INCLUDES 17,691 ACRES OF FARMER-OWNED AND MISCELLANEOUS PRIVATE LANDS LEASED TO FOREST INDUSTRY.

TABLE 3.--AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1974

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
BEAUFORT	337,745	--	--	5,903	156,113	64,758	40,769	70,202	--	--
BERTIE	319,754	--	--	--	100,094	54,223	73,179	77,104	15,154	--
CAMDEN	97,680	--	--	--	23,070	2,811	13,537	58,262	--	--
CARTERET	231,823	--	--	13,375	142,643	43,006	2,861	29,938	--	--
CHOWAN	58,099	--	--	--	15,391	9,934	25,324	7,450	--	--
CRAVEN	333,361	--	--	8,636	157,637	47,928	42,531	56,594	20,035	--
CURRITUCK	77,876	--	--	--	32,395	7,339	6,327	31,815	--	--
DARE	156,426	--	--	--	52,145	41,167	--	63,114	--	--
EDGECOMBE	153,397	--	--	--	50,733	20,928	34,650	44,471	2,615	--
GATES	156,206	--	--	--	57,790	13,256	19,036	66,124	--	--
HALIFAX	277,185	--	--	--	77,135	43,983	96,042	43,558	16,467	--
HERTFORD	145,722	--	--	--	41,266	32,699	44,053	27,704	--	--
HYDE	244,864	--	--	2,581	172,204	7,745	7,743	54,591	--	--
MARTIN	188,452	--	--	--	78,767	25,584	28,785	55,316	--	--
NASH	182,616	--	--	--	62,205	33,044	72,346	12,017	3,004	--
NORTHAMPTON	210,029	--	--	--	43,550	37,844	73,536	37,139	17,960	--
PAMLICO	147,115	--	--	5,426	66,739	19,840	16,278	36,119	2,713	--
PASQUOTANK	72,178	--	--	--	22,586	6,246	15,713	27,633	--	--
PERQUIMANS	86,672	--	--	--	25,579	13,228	26,817	21,048	--	--
PITT	198,825	--	--	2,012	64,321	27,217	34,031	62,843	8,401	--
TYRRELL	213,411	--	--	--	87,276	30,589	8,698	86,848	--	--
WASHINGTON	116,462	--	--	--	38,000	5,225	10,616	62,621	--	--
WILSON	104,481	--	--	--	26,779	18,034	43,600	13,390	2,678	--
TOTAL	4,110,379	--	--	37,933	1,594,418	606,628	736,472	1,045,901	89,027	--

TABLE 4.--*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1974*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
BEAUFORT	337,745	105,297	105,806	126,642	--
BERTIE	319,754	134,587	85,569	87,683	11,915
CAMDEN	97,680	63,678	17,758	16,244	--
CARTERET	231,823	62,738	71,949	91,413	5,723
CHOWAN	58,099	27,564	15,390	9,933	5,212
CRAVEN	333,361	115,062	59,527	132,433	26,339
CURRITUCK	77,876	40,049	30,019	7,808	--
DARE	156,426	38,418	79,585	32,933	5,490
EDGECOMBE	153,397	86,967	31,392	32,422	2,616
GATES	156,206	69,522	45,213	38,921	2,550
HALIFAX	277,185	115,997	78,762	82,426	--
HERTFORD	145,722	73,616	29,255	42,851	--
HYDE	244,864	73,924	75,236	79,716	15,988
MARTIN	188,452	101,372	36,260	47,941	2,879
NASH	182,616	90,371	54,074	38,171	--
NORTHAMPTON	210,029	99,551	60,717	49,761	--
PAMLICO	147,115	59,754	48,755	38,606	--
PASQUOTANK	72,178	40,225	19,461	12,492	--
PERQUIMANS	86,672	32,226	32,153	22,293	--
PITT	198,825	83,657	46,035	67,121	2,012
TYRRELL	213,411	79,014	61,619	64,514	8,264
WASHINGTON	116,462	56,360	25,046	13,396	21,660
WILSON	104,481	61,593	24,856	18,032	--
TOTAL	4,110,379	1,711,542	1,134,437	1,153,752	110,648

TABLE 5.--*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1974*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
BEAUFORT	337,745	--	--	67,460	232,545	37,740
BERTIE	319,754	--	--	96,058	220,932	2,764
CAMDEN	97,680	--	5,415	14,240	69,799	8,226
CARTERET	231,823	--	2,861	17,212	56,061	155,689
CHOWAN	58,099	--	7,452	33,019	15,145	2,483
CRAVEN	333,361	--	14,791	94,550	154,693	69,327
CURRITUCK	77,876	--	3,163	14,515	34,035	26,163
DARE	156,426	--	--	8,232	65,861	82,333
EDGECOMBE	153,397	--	5,231	58,164	89,972	--
GATES	156,206	--	8,159	29,407	113,371	5,269
HALIFAX	277,185	--	8,125	97,949	154,858	16,253
HERTFORD	145,722	--	--	42,296	103,426	--
HYDE	244,864	--	--	15,739	108,493	120,632
MARTIN	188,452	--	--	54,500	133,952	--
NASH	182,616	--	3,004	51,139	128,473	--
NORTHAMPTON	210,029	--	--	60,719	134,343	14,967
PAMLICO	147,115	--	2,713	31,624	72,944	39,834
PASQUOTANK	72,178	--	3,123	20,761	48,294	--
PERQUIMANS	86,672	--	2,412	34,345	44,798	5,117
PITT	198,825	--	2,801	92,139	103,885	--
TYRRELL	213,411	--	2,900	16,527	125,264	68,720
WASHINGTON	116,462	--	--	24,177	76,183	16,102
WILSON	104,481	--	2,678	29,458	72,345	--
TOTAL	4,110,379	--	74,828	1,004,260	2,359,672	671,619

TABLE 6.--*AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1974*

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
				ACRES		
BEAUFORT	337,745	2,705	146,146	148,448	40,446	--
BERTIE	319,754	10,577	102,292	125,504	69,466	11,915
CAMDEN	97,680	8,122	28,484	44,727	16,347	--
CARTERET	231,823	7,652	51,029	114,587	52,832	5,723
CHOWAN	58,099	--	17,630	22,840	12,417	5,212
CRAVEN	333,361	8,526	113,047	115,364	70,085	26,339
CURRITUCK	77,876	6,326	23,624	25,151	22,775	--
DARE	156,426	5,488	49,396	65,863	30,189	5,490
EDGECOMBE	153,397	10,464	54,936	72,301	13,080	2,616
GATES	156,206	13,258	58,300	63,568	18,530	2,550
HALIFAX	277,185	11,051	120,474	127,044	18,616	--
HERTFORD	145,722	4,093	42,679	82,429	16,521	--
HYDE	244,864	5,162	86,585	92,245	44,884	15,988
MARTIN	188,452	5,243	86,013	64,267	30,050	2,879
NASH	182,616	--	68,212	92,315	22,089	--
NORTHAMPTON	210,029	7,206	69,646	89,350	43,827	--
PAMLICO	147,115	2,713	49,459	57,892	37,051	--
PASQUOTANK	72,178	7,572	17,509	38,327	8,770	--
PERQUIMANS	86,672	2,774	41,803	28,577	13,518	--
PITT	198,825	8,401	67,911	91,270	29,231	2,012
TYRRELL	213,411	11,600	66,978	72,782	53,787	8,264
WASHINGTON	116,462	8,170	13,395	46,612	26,625	21,660
WILSON	104,481	754	42,847	47,490	13,390	--
TOTAL	4,110,379	147,857	1,418,395	1,728,953	704,526	110,648

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.—VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1974

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
BEAUFORT	1,114,422	582,694	48,585	317,356	165,787	354,451	163,837	11,027	131,627	57,961
BERTIE	1,701,159	750,276	54,271	569,755	326,857	533,674	179,273	12,781	195,481	116,139
CAMDEN	637,856	295,358	51,737	255,825	34,936	187,323	61,373	17,551	91,350	15,449
CARTERET	590,222	510,424	--	67,401	12,397	205,306	168,562	--	24,397	7,047
CHOWAN	361,496	210,185	1,621	94,584	55,106	95,202	41,385	329	34,567	18,924
CRAVEN	1,223,201	746,347	19,302	319,881	137,671	356,543	198,074	4,094	107,398	46,977
CURRITUCK	398,547	260,137	10,724	103,578	24,108	121,603	68,383	2,512	40,825	9,819
DARE	588,529	334,655	53,806	194,498	5,570	213,256	94,105	23,895	93,993	1,261
EDGECOMBE	1,067,477	534,463	23,708	342,702	166,604	291,718	126,288	5,208	102,987	57,235
GATES	985,103	484,254	66,589	391,977	62,183	294,573	103,836	17,103	147,498	26,196
HALIFAX	1,499,129	655,119	13,581	518,656	311,773	451,825	156,403	3,475	172,450	109,497
HERTFORD	668,290	316,506	36,102	203,522	112,160	208,647	79,974	8,209	70,781	49,784
HYDE	703,481	471,299	39,535	148,353	44,294	254,380	164,974	10,530	68,744	10,532
MARTIN	1,046,955	507,224	42,326	385,830	111,575	289,963	117,798	8,547	124,985	38,633
NASH	1,112,842	569,907	9,807	276,057	257,001	310,937	136,354	2,765	85,362	86,456
NORTHAMPTON	984,503	324,568	16,750	364,232	278,953	305,269	85,395	3,689	121,238	94,947
PAMLICO	591,958	387,089	12,307	136,017	56,545	202,130	113,073	2,406	66,821	19,830
PASQUOTANK	435,450	175,529	71,761	153,131	35,029	133,546	41,095	18,916	63,229	10,266
PERQUIMANS	339,110	146,509	24,970	89,364	78,267	121,216	42,105	7,131	44,311	27,209
PITT	1,053,528	411,903	139,347	385,223	117,055	294,241	101,846	28,823	140,249	38,273
TYRRELL	890,962	499,193	89,404	246,153	56,212	296,467	142,124	24,681	111,315	15,776
WASHINGTON	485,923	237,776	28,420	183,732	35,995	157,223	53,488	7,018	81,919	14,797
WILSON	742,531	428,134	8,384	198,303	107,710	208,749	95,257	1,895	67,204	44,893
TOTAL	19,220,654	9,819,549	973,207	5,946,130	2,583,768	5,873,223	2,535,084	222,622	2,196,966	918,551

FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8. *NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1973*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
BEAUFORT	53,182	27,766	1,341	16,493	7,582	16,035	8,563	249	5,054	2,169
BERTIE	77,046	38,680	1,773	22,748	13,845	19,491	7,447	319	7,773	3,952
CAMDEN	25,283	11,155	2,803	8,599	2,726	5,953	1,971	538	2,823	621
CARTERET	33,928	30,101	-	3,176	651	9,545	7,777	--	1,283	485
CHOWAN	14,584	7,258	42	4,558	2,726	3,582	1,431	7	1,351	793
CRAVEN	51,882	36,637	453	9,971	4,821	14,441	8,196	83	4,552	1,610
CURRITUCK	17,428	10,601	309	5,390	1,128	4,385	1,769	107	2,149	360
DARE	27,088	14,395	3,638	8,968	87	7,583	3,209	975	3,370	29
EDGECOMBE	49,223	25,919	673	15,154	7,477	11,486	5,180	116	3,935	2,255
GATES	37,003	19,055	2,034	12,910	3,004	10,215	4,638	563	4,020	994
HALIFAX	70,343	30,991	572	25,317	13,463	19,680	8,137	62	7,027	4,454
HERTFORD	29,758	15,522	1,094	5,720	7,422	7,873	3,723	185	2,051	1,914
HYDE	36,403	25,824	1,211	7,361	2,007	11,039	7,697	257	2,816	269
MARTIN	40,660	21,427	1,106	11,116	7,011	11,078	4,836	603	4,058	1,581
NASH	51,951	27,838	231	12,558	11,324	13,291	5,774	49	4,143	3,325
NORTHAMPTON	44,336	15,931	884	13,973	14,048	12,718	4,339	65	4,287	4,027
PAMLICO	38,196	24,663	292	11,156	2,085	8,814	5,134	46	2,892	742
PASQUOTANK	22,148	7,834	3,397	8,512	2,405	4,333	1,418	518	2,013	384
PERQUIMAN	18,448	10,359	870	3,318	3,901	4,568	1,989	186	1,473	920
PITT	44,222	21,810	4,356	13,627	4,489	11,058	4,619	639	4,367	1,433
TYRRELL	41,185	24,531	3,475	10,737	2,042	10,684	5,186	908	4,055	535
WASHINGTON	20,253	10,147	1,047	7,380	1,679	5,449	1,748	162	2,920	619
WILSON	36,358	20,148	281	10,798	5,133	8,061	3,394	49	2,749	1,869
TOTAL	880,908	478,995	31,322	249,540	121,056	231,362	108,175	6,686	81,161	35,340

TABLE 3 --ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1973

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
BEAUFORT	98,450	81,839	401	12,557	3,653	24,947	19,746	91	3,854	1,256
BERTIE	149,723	69,466	11,284	52,596	16,378	32,584	13,733	2,186	11,676	4,989
CAMDEN	18,114	11,899	810	4,427	978	4,771	2,468	702	1,410	191
CARTERET	19,395	16,315	--	3,080	--	5,459	4,411	--	929	119
CHOWAN	27,112	19,251	--	3,474	4,387	6,133	3,707	--	1,421	1,005
CRAVEN	57,439	45,684	368	6,206	5,181	13,139	9,404	70	2,138	1,527
CURRITUCK	4,105	3,955	--	150	--	971	622	--	349	--
DARE	1,374	811	--	563	--	942	168	--	521	253
EDGECOMBE	27,918	15,746	--	9,606	2,566	6,378	3,493	--	2,310	575
GATES	43,195	30,963	1,269	5,941	5,022	9,678	5,899	407	2,086	1,286
HALIFAX	60,174	37,147	--	13,735	9,292	16,470	10,140	--	3,358	2,972
HERTFORD	48,649	31,439	1,190	10,322	5,698	13,129	7,529	321	2,992	2,287
HYDE	23,737	10,579	553	11,300	1,305	6,095	2,521	115	2,920	539
MARTIN	49,382	14,108	2,572	25,773	6,929	11,741	3,445	488	5,644	2,164
NASH	46,182	27,667	2,241	8,144	8,130	10,451	6,162	375	1,764	2,150
NORTHAMPTON	39,613	20,555	--	9,332	9,726	10,272	4,837	--	2,750	2,685
PAMLICO	22,214	16,180	--	3,694	2,340	5,451	3,528	--	917	1,006
PASQUOTANK	36,047	29,013	581	4,199	2,254	8,385	6,638	99	1,035	613
PERQUIMANS	42,012	19,101	2,484	14,161	6,266	10,458	4,688	497	3,732	1,541
PITT	68,021	40,863	2,077	17,553	7,528	15,340	8,737	405	4,500	1,698
TYRRELL	11,120	5,497	--	5,623	--	3,171	1,232	--	1,939	--
WASHINGTON	21,807	13,533	1,261	6,693	320	7,071	3,533	448	3,013	77
WILSON	22,670	18,018	--	4,451	201	4,947	3,705	--	1,057	185
TOTAL	938,453	579,628	27,091	233,580	98,154	227,983	130,346	6,204	62,315	29,118

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1974*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
	ACRES					
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	--	--	--	--	--	--
SPRUCE FIR	--	--	--	--	--	--
LONGLEAF PINE	32,386	4,178	5,390	9,088	5,294	8,436
SLASH PINE	5,547	--	--	2,686	2,861	--
LOBLOLLY PINE	1,053,980	21,177	14,524	365,286	411,380	241,613
SHORTLEAF PINE	11,548	--	--	2,924	5,620	3,004
VIRGINIA PINE	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	--	--	--	--
POND PINE	528,890	52,843	24,021	131,481	54,554	265,991
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	1,632,351	78,198	43,935	511,465	479,709	519,044
HARDWOOD TYPES:						
OAK-PINE	606,628	24,358	8,467	129,608	252,308	191,887
OAK-HICKORY	736,472	1,945	4,675	44,354	490,512	194,986
CHESTNUT OAK	--	--	--	--	--	--
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	1,045,901	4,178	13,743	204,687	419,004	404,289
ELM-ASH-COTTONWOOD	89,027	--	--	9,790	56,979	22,258
MAPLE-BEECH-BIRCH	--	--	--	--	--	--
TOTAL	2,478,028	30,481	26,885	388,439	1,218,803	813,420
ALL TYPES	4,110,379	108,679	70,820	899,904	1,698,512	1,332,464

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1974*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
NATIONAL FOREST	108,679	2,233	18,311	45,245	26,825	16,065
OTHER PUBLIC	70,820	2,173	21,594	32,362	6,427	8,264
FOREST INDUSTRY	899,904	28,059	377,935	330,084	131,440	32,386
FARMER	1,698,512	72,333	597,019	735,911	282,389	10,860
MISC. PRIVATE	1,332,464	43,059	403,536	585,351	257,445	43,073
ALL OWNERSHIPS	4,110,379	147,857	1,418,395	1,728,953	704,526	110,648

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1974*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	3,571,943	1,813,001	171,319	1,116,328	471,295
UPPER-STEM PORTION	525,855	172,761	16,325	236,797	99,972
TOTAL	4,097,798	1,985,762	187,644	1,353,125	571,267
POLETIMBER TREES	1,775,425	549,322	34,978	843,841	347,284
ALL GROWING-STOCK TREES	5,873,223	2,535,084	222,622	2,196,966	918,551
ROUGH TREES:					
SAWTIMBER-SIZE TREES	120,117	7,011	560	78,899	33,647
POLETIMBER-SIZE TREES	296,612	15,807	1,570	165,482	113,753
TOTAL	416,729	22,818	2,130	244,381	147,400
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	185,798	1,445	14,108	145,625	24,620
POLETIMBER-SIZE TREES	30,885	101	196	25,354	5,234
TOTAL	216,683	1,546	14,304	170,979	29,854
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	6,040	5,610	206	179	45
POLETIMBER-SIZE TREES	5,421	5,205	84	97	35
TOTAL	11,461	10,815	290	276	80
TOTAL, ALL TIMBER	6,518,096	2,570,263	239,346	2,612,602	1,095,885

TABLE 13.--*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	4,790	1,679	1,245	577	642	379	213	51	--	4	--
SLASH PINE	2,359	1,581	732	46	--	--	--	--	--	--	--
SHORTLEAF PINE	4,805	2,056	1,366	759	405	174	37	18	--	--	--
LOBLOLLY PINE	139,932	48,650	32,761	19,575	15,085	11,041	6,833	3,524	1,430	1,013	20
POND PINE	74,540	35,418	19,240	11,108	4,552	2,358	1,250	436	108	70	--
VIRGINIA PINE	--	--	--	--	--	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	6,788	1,399	1,202	1,013	1,044	811	509	350	217	232	11
PONDCYPRESS	605	78	146	133	114	62	40	7	16	7	2
CEDARS	6,866	3,037	1,505	1,215	582	290	107	58	50	22	--
TOTAL SOFTWOODS	240,685	93,898	58,187	34,426	22,424	15,115	8,989	4,444	1,821	1,348	33
HARDWOOD:											
SELECT WHITE OAKS	24,463	9,951	5,181	3,538	2,374	1,475	970	408	279	246	41
SELECT RED OAKS	2,974	923	672	472	292	124	161	149	73	87	21
CHESTNUT OAK	--	--	--	--	--	--	--	--	--	--	--
OTHER WHITE OAKS	5,178	1,681	1,428	679	568	329	215	91	32	132	23
OTHER RED OAKS	31,090	13,189	7,476	4,850	2,364	1,336	830	437	261	285	62
HICKORY	3,699	1,290	981	524	350	213	102	104	78	55	2
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	93	47	31	--	15	--	--	--	--	--	--
SOFT MAPLE	39,637	18,184	9,863	5,350	3,038	1,609	759	415	277	136	6
BEECH	1,842	438	339	326	207	275	68	69	47	60	13
SWEETGUM	54,323	23,822	12,750	7,278	4,445	2,788	1,640	869	389	319	23
TUPELO AND BLACKGUM	63,722	20,044	14,742	10,218	7,044	5,040	3,045	1,958	820	758	53
ASH	9,107	4,250	2,400	1,210	562	349	170	131	24	9	2
COTTONWOOD	1,352	457	211	250	147	156	53	29	29	20	--
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW-POPLAR	13,148	3,633	3,308	2,251	1,586	992	582	360	187	231	18
BAY AND MAGNOLIA	3,882	2,069	812	593	284	90	14	10	10	--	--
BLACK CHERRY	677	378	147	95	--	57	--	--	--	--	--
BLACK WALNUT	114	--	--	60	31	23	--	--	--	--	--
SYCAMORE	263	46	56	33	42	9	39	12	14	12	--
BLACK LOCUST	--	--	--	--	--	--	--	--	--	--	--
ELM	4,567	1,370	1,420	921	345	161	153	99	45	46	7
OTHER EASTERN HARDWOODS	8,742	4,764	2,130	842	446	295	75	72	14	40	4
TOTAL HARDWOODS	268,873	106,536	64,007	39,490	24,140	15,321	8,876	5,213	2,579	2,436	275
ALL SPECIES	509,558	200,434	122,194	73,916	46,564	30,436	17,865	9,657	4,400	3,784	308

TABLE 14. [illegible]

SPECIES	ALL CLASSES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		5.0-8.9	9.0-12.9	13.0-16.9	17.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0-40.9	41.0 AND [illegible]
					[illegible]						
SOFTWOOD:											
LONGLEAF PINE	45,470	3,895	8,551	[illegible]	[illegible]	10,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SLASH PINE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SHORTLEAF PINE	37,[illegible]	4,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LOBLOLLY PINE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POND PINE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VIRGINIA PINE	--	--	--	--	--	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	155,[illegible]	4,[illegible]	10,256	14,[illegible]	21,701	23,[illegible]	[illegible]	18,[illegible]	[illegible]	[illegible]	[illegible]
PONDCYPRESS	14,[illegible]	[illegible]	1,[illegible]	1,[illegible]	1,979	1,[illegible]	[illegible]	[illegible]	1,[illegible]	[illegible]	1,[illegible]
CEDARS	68,[illegible]	9,[illegible]	10,[illegible]	11,[illegible]	11,[illegible]	8,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL SOFTWOODS	[illegible]	238,056	363,918	[illegible]	448,367	443,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HARDWOOD:											
SELECT WHITE OAKS	[illegible]	30,537	33,[illegible]	41,108	44,[illegible]	39,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SELECT RED OAKS	[illegible]	3,090	4,595	[illegible]	[illegible]	3,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CHESTNUT OAK	--	--	--	--	--	--	--	--	--	--	--
OTHER WHITE OAKS	[illegible]	5,[illegible]	[illegible]	[illegible]	11,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTHER RED OAKS	[illegible]	41,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HICKORY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	[illegible]	[illegible]	[illegible]	--	[illegible]	--	--	--	--	--	--
SOFT MAPLE	[illegible]	[illegible]	[illegible]	[illegible]	71,486	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BEECH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SWEETGUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TUPELO AND BLACKGUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ASH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COTTONWOOD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW POPLAR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BAY AND MAGNOLIA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BLACK CHERRY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BLACK WALNUT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SYCAMORE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BLACK LOCUST	--	--	--	--	--	--	--	--	--	--	--
ELM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTHER EASTERN HARDWOODS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL HARDWOODS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ALL SPECIES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
						THOUSAND CUBIC FEET					
SOFTWOOD:											
LONGLEAF PINE	52,470	3,896	8,551	6,561	12,056	10,506	8,011	2,599	--	290	--
SLASH PINE	7,151	3,529	3,223	299	--	--	--	--	--	--	--
SHORTLEAF PINE	37,595	4,893	9,267	9,216	7,216	4,702	1,355	950	--	--	--
LOBLOLLY PINE	1,922,257	122,058	214,512	250,379	312,168	336,233	285,960	195,104	101,040	101,010	3,793
POND PINE	515,611	81,110	98,187	123,350	81,081	57,673	42,186	20,127	6,555	5,342	--
VIRGINIA PINE	--	--	--	--	--	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	143,752	4,391	9,531	13,207	20,678	22,285	19,713	17,998	14,262	19,932	1,755
PONDCYPRESS	11,171	305	1,128	1,638	1,979	1,754	1,628	336	1,085	871	447
CEDARS	67,699	9,036	10,587	17,386	11,607	8,442	3,609	2,720	2,728	1,584	--
TOTAL SOFTWOODS	2,757,706	229,314	354,986	422,036	446,785	441,595	362,462	239,834	125,670	129,029	5,995
HARDWOOD:											
SELECT WHITE OAKS	279,935	27,921	31,128	39,436	43,535	38,649	34,978	19,136	16,387	21,054	7,711
SELECT RED OAKS	53,726	2,711	4,457	5,677	6,216	3,488	5,983	6,953	4,396	7,945	5,900
CHESTNUT OAK	--	--	--	--	--	--	--	--	--	--	--
OTHER WHITE OAKS	71,095	4,143	7,894	6,871	10,213	7,955	7,412	4,575	1,968	13,962	6,102
OTHER RED OAKS	316,558	36,766	45,584	53,333	42,556	35,365	29,712	20,656	15,743	25,482	11,361
HICKORY	44,652	2,315	5,048	5,281	5,914	6,010	3,802	5,119	5,408	5,276	479
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	513	108	149	--	256	--	--	--	--	--	--
SOFT MAPLE	358,716	59,977	65,877	62,496	55,978	41,598	26,784	18,865	15,394	10,830	917
BEECH	25,257	1,552	2,287	3,510	3,870	7,350	2,583	3,627	2,926	5,512	2,040
SWEETGUM	582,372	60,096	82,660	91,409	91,435	81,167	66,463	46,893	26,373	30,944	5,442
TUPELO AND BLACKGUM	905,249	62,172	99,485	125,947	136,045	139,743	114,062	96,835	51,770	67,115	12,075
ASH	83,742	13,009	16,417	15,741	12,087	10,833	6,771	6,269	1,718	551	346
COTTONWOOD	21,123	1,318	1,430	3,258	3,391	4,627	1,904	1,737	1,906	1,552	--
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW-POPLAR	169,966	11,462	22,450	27,093	32,586	28,519	22,885	18,076	12,067	21,934	2,894
BAY AND MAGNOLIA	26,520	6,186	4,938	6,836	4,920	2,130	469	529	512	--	--
BLACK CHERRY	4,801	1,087	1,101	1,196	--	1,417	--	--	--	--	--
BLACK WALNUT	1,671	--	--	609	573	489	--	--	--	--	--
SYCAMORE	6,273	201	450	542	767	288	1,510	641	740	1,134	--
BLACK LOCUST	--	--	--	--	--	--	--	--	--	--	--
ELM	56,194	3,873	8,935	10,783	7,242	4,880	6,130	5,589	2,861	4,623	2,278
OTHER EASTERN HARDWOODS	66,654	13,154	12,788	9,988	8,708	8,267	3,102	3,992	956	3,658	2,041
TOTAL HARDWOODS	3,115,517	308,041	413,078	470,006	465,292	422,775	334,550	259,492	161,125	221,572	59,586
ALL SPECIES	5,873,223	537,355	768,064	892,042	912,077	864,370	697,012	499,326	286,795	350,601	65,581

TABLE 16. --VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974

SPECIES	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand board feet								
SOFTWOOD:									
LONGLEAF PINE	204,412	26,143	37,952	36,409	46,172	15,804	--	1,926	--
SLASH PINE	999	999	--	--	--	--	--	--	--
SHORTLEAF PINE	39,703	32,684	31,026	23,060	7,455	5,528	--	--	--
LOBLOLLY PINE	7,955,026	878,005	1,374,930	1,687,227	1,571,004	1,144,523	622,725	660,626	26,886
POND PINE	1,548,410	467,086	367,156	242,636	231,028	116,768	39,884	33,852	--
VIRGINIA PINE	--	--	--	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--
BALDCYPRESS	605,254	37,756	77,405	96,375	94,966	92,722	77,950	116,694	11,386
PONDCYPRESS	44,710	5,285	7,718	7,902	7,363	1,760	5,962	5,235	2,884
CEDARS	223,243	66,430	52,435	43,018	19,645	15,671	16,182	9,862	--
TOTAL SOFTWOODS	10,692,756	1,514,344	1,968,622	2,206,627	1,978,233	1,392,876	762,703	828,195	41,156
HARDWOOD:									
SELECT WHITE OAKS	794,839	--	141,367	151,602	152,980	91,787	85,603	119,474	52,026
SELECT RED OAKS	285,899	--	21,580	14,305	26,976	33,768	23,230	46,055	39,985
CHESTNUT OAK	--	--	--	--	--	--	--	--	--
OTHER WHITE OAKS	259,506	--	36,771	32,788	34,655	22,981	10,460	81,907	39,944
OTHER RED OAKS	846,562	--	155,951	149,906	138,309	102,550	83,527	144,954	71,355
HICKORY	147,749	--	19,951	24,254	17,428	24,897	28,255	29,765	2,999
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	945	--	945	--	--	--	--	--	--
SOFT MAPLE	646,315	--	173,423	151,268	108,790	82,862	71,452	54,111	5,009
BEECH	199,380	--	14,039	27,660	9,953	14,317	11,753	22,668	8,690
SWEETGUM	1,603,402	--	321,261	344,855	319,564	245,782	147,165	187,815	36,960
TUPELO AND BLACKGUM	2,716,988	--	446,944	554,141	510,225	475,586	270,422	381,213	78,457
ASH	151,101	--	38,615	41,654	28,922	28,728	8,420	2,778	1,984
COTTONWOOD	70,262	--	12,633	19,687	9,034	9,233	10,499	9,176	--
BASSWOOD	--	--	--	--	--	--	--	--	--
YELLOW-POPLAR	652,109	--	114,510	119,158	108,253	93,473	66,563	131,157	18,995
BAY AND MAGNOLIA	30,923	--	15,954	7,985	2,044	2,469	2,477	--	--
BLACK CHERRY	4,539	--	--	4,539	--	--	--	--	--
BLACK WALNUT	3,476	--	1,877	1,599	--	--	--	--	--
SYCAMORE	23,205	--	2,310	1,096	6,576	3,014	3,770	6,439	--
BLACK LOCUST	--	--	--	--	--	--	--	--	--
ELM	140,903	--	20,644	19,027	26,013	25,397	13,565	23,379	12,878
OTHER EASTERN HARDWOODS	121,699	--	28,794	29,962	12,380	16,956	4,477	17,608	11,522
TOTAL HARDWOODS	8,529,898	--	1,567,569	1,695,486	1,512,102	1,273,800	841,638	1,258,499	380,804
ALL SPECIES	19,222,654	1,514,344	3,536,191	3,902,113	3,490,335	2,666,676	1,604,341	2,086,694	421,960

TABLE 17. --*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - *THOUSAND CUBIC FEET* - -	
SOFTWOOD:		
YELLOW PINES	108,175	130,346
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	3,932	5,585
OTHER EASTERN SOFTWOODS	2,754	619
TOTAL SOFTWOODS	114,861	136,550
HARDWOOD:		
SELECT WHITE AND RED OAKS	12,268	11,110
OTHER WHITE AND RED OAKS	17,297	12,565
HICKORY	1,375	937
YELLOW BIRCH	--	--
HARD MAPLE	31	--
SWEETGUM	22,339	19,647
ASH, WALNUT, AND BLACK CHERRY	2,989	3,045
YELLOW-POPLAR	15,078	5,643
TUPELO AND BLACKGUM	16,960	26,275
BAY AND MAGNOLIA	689	292
OTHER EASTERN HARDWOODS	27,475	11,919
TOTAL HARDWOODS	116,501	91,433
ALL SPECIES	231,362	227,983

TABLE 18. --*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - *THOUSAND BOARD FEET* - - -	
SOFTWOOD:		
YELLOW PINES	478,990	579,628
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	19,868	26,725
OTHER EASTERN SOFTWOODS	11,454	366
TOTAL SOFTWOODS	510,312	606,719
HARDWOOD:		
SELECT WHITE AND RED OAKS	44,835	38,160
OTHER WHITE AND RED OAKS	56,752	42,357
HICKORY	5,478	2,701
YELLOW BIRCH	--	--
HARD MAPLE	48	--
SWEETGUM	74,994	75,955
ASH, WALNUT, AND BLACK CHERRY	9,031	9,330
YELLOW-POPLAR	54,094	20,110
TUPELO AND BLACKGUM	65,777	108,844
BAY AND MAGNOLIA	1,863	414
OTHER EASTERN HARDWOODS	57,724	33,863
TOTAL HARDWOODS	370,596	331,734
ALL SPECIES	880,908	938,453

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	19,844	46,624
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	478	1,468
OTHER EASTERN SOFTWOODS	55	--
TOTAL SOFTWOODS	20,377	48,092
HARDWOOD:		
SELECT WHITE AND RED OAKS	652	2,608
OTHER WHITE AND RED OAKS	2,380	5,178
HICKORY	210	547
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	2,734	8,844
ASH,WALNUT, AND BLACK CHERRY	261	864
YELLOW-POPLAR	609	2,245
TUPELO AND BLACKGUM	2,797	8,948
BAY AND MAGNOLIA	153	248
OTHER EASTERN HARDWOODS	6,431	14,409
TOTAL HARDWOODS	16,227	43,891
ALL SPECIES	36,604	91,983

TABLE 20. --*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	121,133	98,933	3,027	13,816	5,357	113,159	97,489	173	10,930	4,567
OTHER PUBLIC	92,674	44,076	1,934	35,694	10,970	80,534	42,799	1,566	27,347	8,822
FOREST INDUSTRY	1,092,745	436,338	35,937	500,464	120,006	982,852	432,067	33,877	418,977	97,931
FARMER	3,132,670	1,152,132	94,085	1,259,752	626,701	2,844,399	1,147,639	88,350	1,074,736	533,674
MISCELLANEOUS PRIVATE	2,067,413	827,969	104,073	802,600	332,771	1,852,279	815,090	98,656	664,976	273,557
ALL OWNERSHIPS	6,506,635	2,559,448	239,056	2,612,326	1,095,805	5,873,223	2,535,084	222,622	2,196,966	918,551

TABLE 21. --*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	251,003	233,832	--	10,945	6,226	127,657	104,303	835	16,902	5,617
OTHER PUBLIC	131,549	96,391	2,643	26,568	5,947	92,648	26,505	4,868	48,297	12,978
FOREST INDUSTRY	1,463,614	894,303	41,461	440,141	87,709	1,652,272	597,932	94,228	748,840	211,272
FARMER	4,295,087	2,401,663	147,452	1,178,729	567,243	5,385,571	2,416,883	239,632	1,859,652	869,404
MISCELLANEOUS PRIVATE	2,811,395	1,669,079	202,769	697,248	242,299	3,011,858	1,378,658	139,319	918,608	575,073
ALL OWNERSHIPS	8,952,648	5,295,268	394,325	2,353,631	909,424	10,270,006	4,524,281	478,882	3,592,499	1,674,344

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22. - NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1973

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	5,139	4,371	4	601	162	1,726	1,544	--	--	182
OTHER PUBLIC	3,344	1,371	26	1,036	911	1,400	931	--	469	--
FOREST INDUSTRY	40,072	21,344	1,454	13,809	3,555	77,806	53,008	1,337	15,477	7,984
FARMER	108,730	46,274	1,383	39,768	21,365	97,729	51,684	1,859	29,457	14,729
MISCELLANEOUS PRIVATE	73,014	33,871	3,219	26,147	9,847	49,322	23,179	3,008	16,912	6,223
ALL OWNERSHIPS	231,352	108,175	5,886	81,161	36,340	227,983	130,346	6,204	62,315	29,118

TABLE 23. - NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1973

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	19,674	17,844	23	995	812	6,285	5,826	--	--	459
OTHER PUBLIC	10,543	7,165	149	2,061	1,168	3,238	2,170	--	1,068	--
FOREST INDUSTRY	132,545	75,723	3,757	40,529	12,536	319,723	236,334	6,628	53,187	23,574
FARMER	441,589	227,576	12,395	130,773	70,845	417,763	233,604	9,306	118,003	56,850
MISCELLANEOUS PRIVATE	276,557	150,682	14,998	75,182	35,695	191,444	101,694	11,157	61,322	17,271
ALL OWNERSHIPS	880,908	478,990	31,322	249,540	121,056	938,453	579,628	27,091	233,580	98,154

TABLE 24.--*AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1974*

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	4,217	1,151	3,402	1,033	3,069	1,062	2,032	624	6,939	1,729	4,259	1,209
HARDWOOD	253	148	76	46	19	55	149	76	497	264	183	139
TOTAL	4,470	1,299	3,478	1,079	3,088	1,117	2,181	700	7,436	1,993	4,442	1,348
OTHER TIMBER:												
SOFTWOOD	--	13	--	36	--	34	--	7	--	5	--	23
HARDWOOD	--	33	--	14	--	32	--	14	--	54	--	38
TOTAL	--	46	--	50	--	66	--	21	--	59	--	61
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	2,988	685	2,712	635	1,555	546	1,739	458	3,839	828	2,869	671
HARDWOOD	1,298	509	821	296	1,635	719	443	233	1,793	692	1,285	477
TOTAL	4,286	1,194	3,533	931	3,190	1,265	2,182	691	5,632	1,520	4,154	1,148
OTHER TIMBER:												
SOFTWOOD	--	5	--	18	--	12	--	2	--	5	--	5
HARDWOOD	--	88	--	67	--	59	--	41	--	123	--	80
TOTAL	--	93	--	85	--	71	--	43	--	128	--	85
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	905	201	1,664	255	--	--	1,128	229	826	190	1,046	223
HARDWOOD	2,964	1,060	6,821	1,764	1,750	587	4,264	1,229	2,792	1,041	3,001	1,059
TOTAL	3,869	1,261	8,485	2,019	1,750	587	5,392	1,458	3,618	1,231	4,047	1,282
OTHER TIMBER:												
SOFTWOOD	--	1	--	--	--	--	--	--	--	2	--	1
HARDWOOD	--	146	--	133	--	49	--	167	--	146	--	141
TOTAL	--	147	--	133	--	49	--	167	--	148	--	142
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	1,164	275	863	225	563	143	982	223	1,291	275	1,151	309
HARDWOOD	4,539	1,575	123	310	4,094	1,436	4,893	1,656	5,280	1,747	3,600	1,360
TOTAL	5,703	1,850	986	535	4,657	1,579	5,875	1,879	6,571	2,022	4,751	1,669
OTHER TIMBER:												
SOFTWOOD	--	13	--	255	-	22	--	10	--	12	--	13
HARDWOOD	--	332	--	171	-	512	--	357	--	327	--	320
TOTAL	--	345	--	426	--	534	--	367	--	339	--	333
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	2,601	671	3,119	899	2,011	684	1,692	484	3,129	743	2,586	697
HARDWOOD	2,075	758	365	143	1,446	558	1,548	537	2,690	967	1,857	716
TOTAL	4,676	1,429	3,484	1,042	3,457	1,242	3,238	1,021	5,819	1,710	4,443	1,413
OTHER TIMBER:												
SOFTWOOD	--	10	--	40	--	25	--	7	--	6	--	14
HARDWOOD	--	144	--	34	--	162	--	106	--	167	--	150
TOTAL	--	154	--	74	--	187	--	113	--	173	--	164
ALL TIMBER	4,676	1,583	3,484	1,116	3,457	1,429	3,238	1,134	5,819	1,883	4,443	1,577

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1955, 1963, AND 1974*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1963-1974
	1955	1963	1974	
	- - - - - - - - - ACRES - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	2,391,100	2,540,198	2,238,979	-301,219
HARDWOOD TYPES	1,749,300	1,707,683	1,871,400	+163,717
TOTAL	4,140,400	4,247,881	4,110,379	-137,502
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	400	700	1,756	+ 1,056
UNPRODUCTIVE	261,400	38,164	34,172	- 3,992
TOTAL	261,800	38,864	35,928	- 2,936
NONFOREST LAND:				
CROPLAND	1,804,100	1,733,301	1,814,616	+ 81,315
PASTURE AND RANGE	125,400	181,996	91,656	- 90,340
OTHER	413,500	442,262	582,110	+139,848
TOTAL	2,343,000	2,357,559	2,488,382	+130,823
ALL LAND[1]	6,745,200	6,644,304	6,634,689	- 9,615

[1] EXCLUDES ALL WATER AREAS.

TABLE 26. --*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
			SAWTIMBER (IN THOUSAND BOARD FEET)								
SOFTWOOD	1955	9,939,039	--	--	1,485,066	2,138,192	2,159,524	1,655,559	1,071,396	629,908	799,394
	1963	11,330,178	--	--	1,575,286	2,237,371	2,363,061	2,041,117	1,405,234	757,648	950,461
	1974	10,692,756	--	--	1,514,344	1,968,622	2,206,627	1,978,233	1,392,876	762,703	869,351
HARDWOOD	1955	8,298,374	--	--	--	1,322,757	1,594,817	1,457,420	1,291,740	819,254	1,812,386
	1963	8,551,138	--	--	--	1,398,260	1,576,118	1,538,170	1,463,289	817,948	1,757,353
	1974	8,529,898	--	--	--	1,567,569	1,695,486	1,512,102	1,273,800	841,638	1,639,303
			GROWING STOCK (IN THOUSAND CUBIC FEET)								
SOFTWOOD	1955	2,557,322	178,496	331,718	413,898	485,291	432,164	303,327	184,469	103,791	124,168
	1963	2,836,850	212,504	316,218	439,043	507,801	472,896	373,968	241,948	124,839	147,633
	1974	2,757,706	229,314	354,986	422,036	446,785	441,595	362,462	239,834	125,670	135,024
HARDWOOD	1955	2,727,624	211,389	305,137	367,543	392,626	397,710	322,438	263,137	156,825	310,819
	1963	2,912,803	266,808	349,416	392,153	415,037	393,047	340,303	298,083	156,575	301,381
	1974	3,115,517	308,041	413,078	470,006	465,292	422,775	334,550	259,492	161,125	281,158
			ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)								
SOFTWOOD	1955	2,594,699	185,835	340,052	418,936	488,231	434,318	305,353	185,421	104,955	131,598
	1963	2,878,228	221,240	324,165	444,399	510,860	475,250	376,468	243,191	126,245	156,410
	1974	2,798,504	238,056	363,918	427,199	449,367	443,896	364,857	241,105	127,060	143,046
HARDWOOD	1955	3,232,568	298,001	386,419	425,909	446,410	438,605	355,343	288,257	180,533	413,091
	1963	3,460,829	376,128	442,486	454,421	471,893	433,467	375,025	326,562	180,313	400,534
	1974	3,708,131	433,515	523,017	544,416	528,841	466,099	368,699	284,311	185,540	373,693

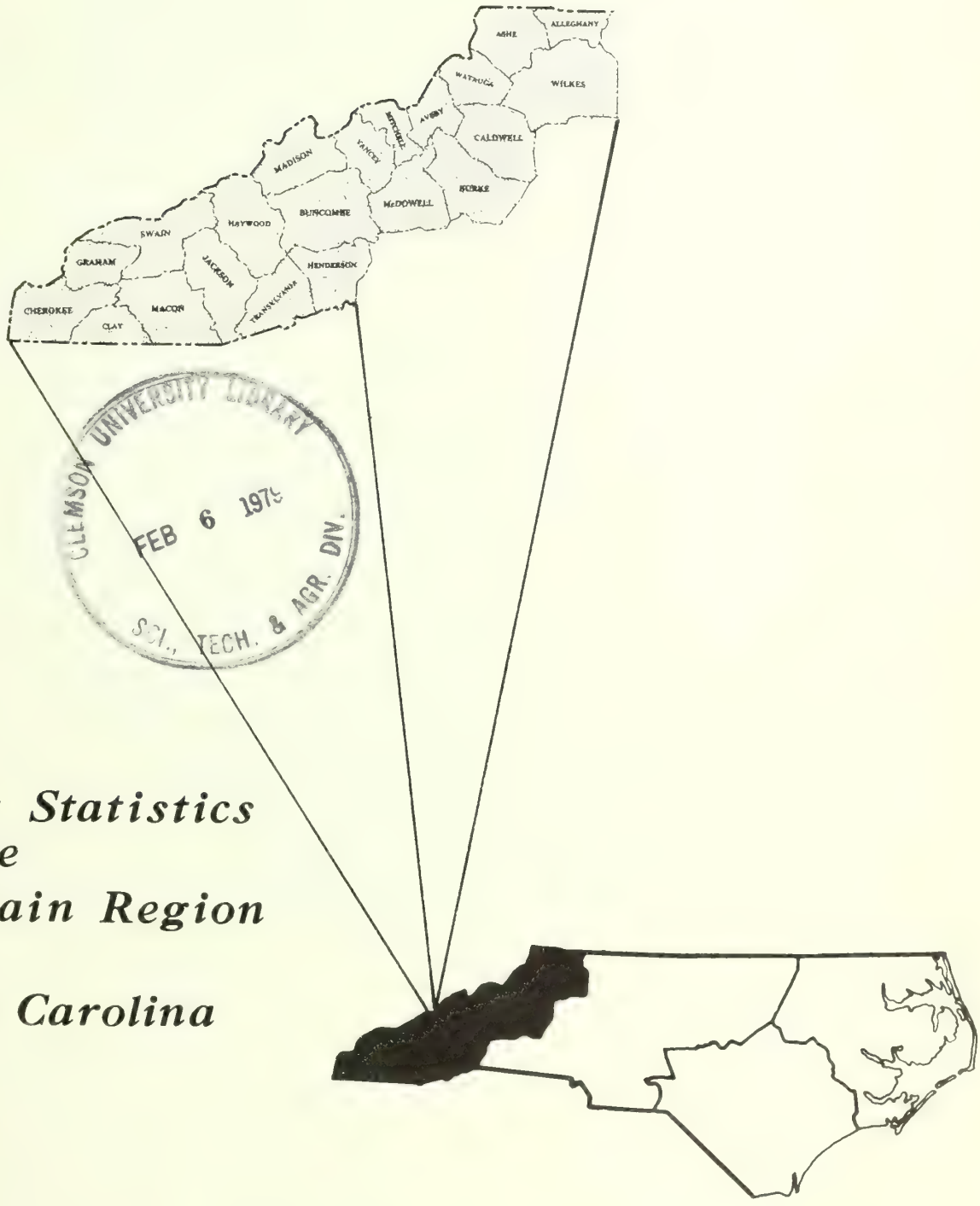
[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Welch, Richard L., and Knight, Herbert A.
1974. Forest statistics for the Northern Coastal Plain of North Carolina, 1974. USDA For. Serv. Resour. Bull. SE-30, 33 p. Southeast. For. Exp. Stn., Asheville, N.C.

New Forest Survey findings identify several highly significant trends in this 23-county area. Between 1963 and 1974, commercial forest area decreased by more than 3 percent to 4.1 million acres, and area occupied by sawtimber stands dropped by a million acres. Total volume of growing-stock timber inched up by 2 percent, but most of this modest gain was in small hardwood. A healthy, 29-percent increase in annual growth failed to keep pace with a 53-percent surge in annual timber removals. In 1973, slightly over half of the growth was hardwood, yet 60 percent of the volume removed was softwood. As a result, softwood removals exceeded growth by 19 percent.

Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

SDA Forest Service Resource Bulletin SE-31 February 1975



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Forest Statistics for the Mountain Region of North Carolina 1974

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Mountain Region of North Carolina. The inventory was started in May 1974 and completed in September 1974. Three previous inventories, completed in 1938, 1955, and 1964, provide statistics for measuring changes and trends over the past 36 years. In this report, the primary emphasis is on the changes and trends since 1964.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 21-county area covered by this report is one of four Survey units in North Carolina. Similar reports, USDA Forest Service Resource Bulletins SE-26 and SE-30, have been issued for the Southern Coastal Plain and Northern Coastal Plain, and a similar report is planned for the Piedmont when that unit is completed. The survey will provide updated statistics on the timber resource for all of North Carolina when completed.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the North Carolina Forest Service of the State Department of Natural and Economic Resources, Tennessee Valley Authority, and the Southern Region of the USDA Forest Service in the collection of the field data. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Mountain Region of North Carolina
1974

by
Noel D. Cost, Resource Analyst

HIGHLIGHTS

ince 1964, in the Mountain Region of North Carolina--

--there has been no significant change in the total area of commercial forest land. During this 10-year period, 123,000 acres of commercial forest were diverted to other land uses, and 92,000 acres of new forest were added. Over half of the diversion was to agriculture and urban development, and the remaining diversion is attributed to reclassification of commercial forest land on the Pisgah and Nantahala National Forests. Commercial forest land now occupies 4.0 million acres, or 71 percent of the total land area.

--the proportion of commercial forest land owned by wood-using industries has declined from 8 to 3 percent. Commercial forest land owned by forest industries was reduced by 187,000 acres, all of which presumably shifted to the miscellaneous private category. Over 23 percent of the commercial forests are publicly owned, and most of these lands are in the Pisgah and Nantahala National Forests. Collectively, farmers and miscellaneous private owners now own almost 3.0 million acres, or 74 percent of the commercial forest.

--nearly eight out of every 10 acres now classified as commercial forest showed no evidence of treatment or major disturbance. The relatively low level of forestry activity is attributed to several factors. Over 35 percent of the commercial forest occurs on slopes of 50 percent or more; hardwood species dominate about four-fifths of the Survey Unit; and 98 percent of the commercial forest is made up of natural stands. Almost one-fourth of the commercial forest is publicly owned, and these stands are generally managed on rather long rotations.

--average stand density measured in basal area per acre of all live trees 5.0 inches d.b.h. and larger has increased from 61 to 80 square feet. Hardwoods comprise 81 percent of this basal area, about the same proportion as in 1964. Trees that fail to qualify as growing stock because of roughness, rot, poor form, or species make up about one-fifth of the stocking.

--volume of softwood growing stock has increased from 0.9 to 1.3 billion cubic feet, or by 34 percent. The increase was 7 percent between 1955 and 1964. More than three-fourths of this increase was in the volume of eastern white pine and Virginia pine. Of all the softwood species, only shortleaf pine showed a small decline. It is also significant that the increase in softwood volume occurred across the range of diameter classes. The softwood inventory includes 4.2 billion board feet of sawtimber, 44 percent more than in 1964.

--volume of hardwood growing stock has increased from 3.4 to 4.5 billion cubic feet, or by 31 percent. The increase was 11 percent between 1955 and 1964. All major hardwood species registered gains in volume, but the oaks, yellow-poplar, maple, and beech accounted for 80 percent of this increase. Again, the increase in volume occurred across the range of diameters. The current inventory of hardwood growing stock includes 12.4 billion board feet of sawtimber, 37 percent more than in 1964.

In 1972--

--net growth of growing stock averaged 56 cubic feet per acre of commercial forest land and totaled 224 million cubic feet. About one-half of this growth was oak and yellow-poplar, 27 percent was yellow pine and other softwoods, and miscellaneous hardwood species accounted for the remaining 23 percent. By ownership class, 24 percent of the growth occurred on publicly owned forest, 4 percent on lands owned by forest industries, 28 percent on farm woodlands, and the remaining 44 percent on other private lands. The net growth of all species included 767 million board feet of sawtimber.

--removals of growing stock totaled almost 79 million cubic feet, or about one-third of the net growth. Although softwoods made up 22 percent of the growing-stock inventory, softwoods accounted for over 42 percent of the removals. Removals, by ownership, differed from the distribution of net growth. Only 17 percent of the removals were from publicly owned forests, 4 percent came from industry lands, 33 percent from farm woodlands, and 46 percent were provided by the other private lands. The total removal of all species included 259 million board feet of sawtimber.

--mortality of growing stock totaled 27 million cubic feet and reduced gross growth by 11 percent. About 69 percent of this mortality was hardwood. Total mortality included 62 million board feet of sawtimber.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 19,486 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 779 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 561 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees at 88 sample locations in the Mountain Region of North Carolina, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 12 active cutting operations which will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 577 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land - - - - - -	0.84
Per billion cubic feet of growing stock - - - - - - - -	5.62
Per billion cubic feet of net annual growth - - - - - -	1.30
Per billion cubic feet of annual removals - - - - - - -	3.56

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
ALLEGHANY	6.03	24.96	22.81	100.17
ASHE	2.75	17.25	16.16	60.02
AVERY	3.83	10.78	13.66	49.17
BUNCOMBE	1.79	7.60	9.28	46.21
BURKE	1.31	12.18	12.38	29.51
CALDWELL	1.36	10.29	10.05	39.14
CHEROKEE	1.22	9.42	14.72	44.06
CLAY	1.94	11.11	17.86	72.41
GRAHAM	1.11	9.16	10.42	100.00
HAYWOOD	2.32	9.79	12.32	100.01
HENDERSON	2.18	11.59	9.97	89.54
JACKSON	1.70	9.39	12.75	40.82
MCDOWELL	1.18	8.65	9.57	52.66
MACON	1.54	9.75	11.93	45.66
MADISON	1.32	7.81	8.56	70.03
MITCHELL	1.58	10.33	11.63	100.01
SWAIN	1.63	13.85	12.24	68.61
TRANSYLVANIA	0.91	8.39	9.13	57.93
WATAUGA	2.87	17.34	22.45	100.03
WILKES	1.68	7.39	9.75	43.82
YANCEY	1.82	10.48	10.62	90.86
UNIT TOTAL	0.42	2.34	2.75	12.67

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.5	61.0	68.2	60.0
8	68.9	68.1	76.0	68.4
10	73.8	73.1	81.4	73.4
12	76.9	76.7	85.2	76.4
14	79.3	79.4	88.2	78.4
16	80.8	81.6	90.4	79.8
18	81.9	83.3	92.3	80.8
20	83.1	84.8	93.8	81.5
22	83.2	86.0	95.1	82.1
24+	85.7	--	98.1	83.1
AVERAGE	75.1	74.4	86.4	74.5

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1974*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
ALLEGHANY	144,000	74,821	71,030	--	3,791	69,179
ASHE	272,640	155,836	154,140	--	1,696	116,804
AVERY	156,800	128,487	126,385	50	2,052	28,313
BUNCOMBE	420,480	294,317	280,469	1,220	12,628	126,163
BURKE	330,191	261,840	251,909	489	9,442	68,351
CALDWELL	300,890	244,954	244,711	--	243	55,936
CHEROKEE	289,280	258,450	256,033	7	2,410	30,830
CLAY	133,760	112,744	109,177	512	3,055	21,016
GRAHAM	186,880	178,063	154,919	497	22,647	8,817
HAYWOOD	352,240	272,923	189,193	1,041	82,689	79,317
HENDERSON	241,862	157,836	157,562	29	245	84,026
JACKSON	314,240	266,259	260,962	527	4,770	47,981
MCDOWELL	279,040	227,929	225,505	552	1,872	51,111
MACON	328,320	273,959	261,487	2,725	9,747	54,361
MADISON	288,000	214,591	214,265	52	274	73,409
MITCHELL	137,600	110,656	108,733	426	1,497	26,944
SWAIN	335,360	320,335	106,821	451	213,063	15,025
TRANSYLVANIA	244,280	217,201	203,292	2,596	11,313	27,079
WATAUGA	202,880	128,935	121,850	--	7,085	73,945
WILKES	487,411	377,188	370,646	--	6,542	110,223
YANCEY	199,680	155,356	145,477	884	8,995	44,324
TOTAL	5,645,834	4,432,680	4,014,566	12,058	406,056	1,213,154

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 14,018 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1974*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY[1]	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
ALLEGHANY	71,030	--	--	6	--	--	39,458	7,891	23,675
ASHE	154,140	--	--	80	2	--	102,705	7,336	44,017
AVERY	126,385	22,558	--	435	--	2,344	27,559	27,558	45,931
BUNCOMBE	280,469	22,307	--	40	21,816	285	78,673	7,867	149,481
BURKE	251,909	38,354	--	3,600	6,057	14,109	43,135	51,760	94,894
CALDWELL	244,711	49,228	--	--	1,058	22,349	27,532	6,883	137,661
CHEROKEE	256,033	79,435	4,740	--	1,645	2,813	98,004	19,600	49,796
CLAY	109,177	56,344	--	--	--	742	5,788	11,576	34,727
GRAHAM	154,919	87,735	1,756	--	6	1,762	19,098	6,366	38,196
HAYWOOD	189,193	45,246	--	125	9,185	5,000	64,818	--	64,819
HENDERSON	157,562	17,132	--	946	220	2,367	43,231	7,205	86,461
JACKSON	260,962	26,669	17,427	524	1,009	11,819	65,414	43,612	94,488
MCDOWELL	225,505	65,686	--	410	510	13,625	36,319	21,792	87,163
MACON	261,487	135,646	--	--	27	522	71,594	17,899	35,799
MADISON	214,265	47,185	--	14	1,454	363	151,478	--	13,771
MITCHELL	108,733	15,053	--	--	2,849	531	48,623	--	41,677
SWAIN	106,821	13,349	28,495	--	955	--	17,460	17,460	29,102
TRANSYLVANIA	203,292	74,011	--	--	261	8,697	35,390	42,466	42,467
WATAUGA	121,850	393	--	215	--	10,602	31,612	31,610	47,418
WILKES	370,646	--	2,279	6,133	114	27,546	86,957	26,886	220,731
YANCEY	145,477	24,054	--	32	30	2,325	82,411	--	36,625
TOTAL	4,014,566	820,385	54,697	12,560	47,198	127,801	1,177,259	355,767	1,418,899

[1]NOT INCLUDING 927 ACRES OF FARMER-OWNED AND MISCELLANEOUS PRIVATE LANDS LEASED TO FOREST INDUSTRY.

TABLE 3.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1974*

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
ALLEGHANY	71,030	7,892	--	--	--	--	63,138	--	--	--
ASHE	154,140	--	--	--	7,336	--	132,131	--	--	14,673
AVERY	126,385	--	--	--	--	--	108,013	--	--	18,372
BUNCOMBE	280,469	285	--	--	28,062	15,734	232,025	--	--	4,363
BURKE	251,909	8,626	--	--	75,994	2,822	164,467	--	--	--
CALDWELL	244,711	6,883	--	--	20,649	36,794	180,385	--	--	--
CHEROKEE	256,033	19,601	--	--	14,765	59,060	152,807	--	--	9,800
CLAY	109,177	--	--	--	25,148	--	76,986	--	--	7,043
GRAHAM	154,919	8,128	--	--	6,366	6,366	104,297	--	--	29,762
HAYWOOD	189,193	10,028	--	--	5,027	5,027	141,332	--	--	27,779
HENDERSON	157,562	14,410	--	--	9,572	14,410	119,170	--	--	--
JACKSON	260,962	--	--	--	--	5,333	233,823	--	--	21,806
MCDOWELL	225,505	--	--	--	14,528	45,401	165,576	--	--	--
MACON	261,487	--	--	--	--	15,369	246,118	--	--	--
MADISON	214,265	20,657	--	--	20,367	13,626	145,990	--	--	13,625
MITCHELL	108,733	--	--	--	--	--	80,948	--	--	27,785
SWAIN	106,821	--	--	--	26,958	--	79,863	--	--	--
TRANSYLVANIA	203,292	7,078	--	--	--	17,316	178,898	--	--	--
WATAUGA	121,850	215	7,903	--	--	--	97,927	--	--	15,805
WILKES	370,646	20,066	--	--	53,643	101,125	175,745	--	6,689	13,378
YANCEY	145,477	14,028	4,811	--	--	9,156	92,033	--	--	25,449
TOTAL	4,014,566	137,897	12,714	--	308,415	347,539	2,971,672	--	6,689	229,640

TABLE 4.--*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1974*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
ALLEGHANY	71,030	39,463	15,783	15,784	--
ASHE	154,140	58,688	51,435	36,680	7,337
AVERY	126,385	63,070	63,315	--	--
BUNCOMBE	280,469	189,467	67,399	23,603	--
BURKE	251,909	103,491	96,071	37,328	15,019
CALDWELL	244,711	103,538	119,466	21,707	--
CHEROKEE	256,033	108,070	93,073	54,890	--
CLAY	109,177	64,154	32,192	12,831	--
GRAHAM	154,919	101,244	47,309	6,366	--
HAYWOOD	189,193	132,043	33,603	23,547	--
HENDERSON	157,562	97,555	45,597	14,410	--
JACKSON	260,962	125,604	100,952	27,138	7,268
MCDOWELL	225,505	111,903	81,794	31,808	--
MACON	261,487	165,755	80,857	14,875	--
MADISON	214,265	117,942	89,438	6,885	--
MITCHELL	108,733	58,998	49,735	--	--
SWAIN	106,821	36,629	64,371	5,821	--
TRANSYLVANIA	203,292	111,148	78,338	13,806	--
WATAUGA	121,850	60,837	45,208	--	15,805
WILKES	370,646	169,057	165,651	35,938	--
YANCEY	145,477	103,978	36,626	62	4,811
TOTAL	4,014,566	2,122,634	1,458,213	383,479	50,240

TABLE 5.--*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1974*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
ALLEGHANY	71,030	--	--	--	47,356	23,674
ASHE	154,140	--	14,672	29,344	88,034	22,090
AVERY	126,385	--	9,186	28,670	60,970	27,559
BUNCOMBE	280,469	--	--	23,887	200,456	56,126
BURKE	251,909	6,392	15,019	2,822	199,872	27,804
CALDWELL	244,711	6,883	8,205	--	192,564	37,059
CHEROKEE	256,033	34,365	9,929	11,574	136,138	64,027
CLAY	109,177	--	--	12,831	57,854	38,492
GRAHAM	154,919	--	--	--	118,791	36,128
HAYWOOD	189,193	--	5,028	28,547	131,275	24,343
HENDERSON	157,562	--	--	45,952	89,995	21,615
JACKSON	260,962	7,268	7,269	56,787	107,198	82,440
MCDOWELL	225,505	--	5,474	10,948	201,819	7,264
MACON	261,487	--	5,897	24,319	169,035	62,236
MADISON	214,265	6,886	13,771	42,635	116,837	34,136
MITCHELL	108,733	--	--	13,892	87,895	6,946
SWAIN	106,821	--	--	--	64,877	41,944
TRANSYLVANIA	203,292	7,078	6,729	27,611	145,169	16,705
WATAUGA	121,850	--	10,817	23,708	47,811	39,514
WILKES	370,646	22,559	20,067	66,888	241,066	20,066
YANCEY	145,477	--	--	32,343	108,323	4,811
TOTAL	4,014,566	91,431	132,063	482,758	2,613,335	694,979

TABLE 6.--*AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1974*

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
				ACRES		
ALLEGHANY	71,030	--	--	39,463	31,567	--
ASHE	154,140	--	7,336	95,368	44,099	7,337
AVERY	126,385	--	--	71,268	55,117	--
BUNCOMBE	280,469	--	8,923	203,189	68,357	--
BURKE	251,909	8,627	66,780	119,995	41,488	15,019
CALDWELL	244,711	--	74,420	128,993	41,298	--
CHEROKEE	256,033	4,965	14,764	187,174	49,130	--
CLAY	109,177	--	25,149	58,366	25,662	--
GRAHAM	154,919	--	33,803	96,686	24,430	--
HAYWOOD	189,193	5,028	32,807	132,043	19,315	--
HENDERSON	157,562	--	25,148	118,004	14,410	--
JACKSON	260,962	--	45,077	146,048	62,569	7,268
MCDOWELL	225,505	--	50,938	132,775	41,792	--
MACON	261,487	--	50,438	133,968	77,081	--
MADISON	214,265	--	54,650	139,104	20,511	--
MITCHELL	108,733	--	35,311	59,529	13,893	--
SWAIN	106,821	--	5,820	95,181	5,820	--
TRANSYLVANIA	203,292	--	6,728	147,720	48,844	--
WATAUGA	121,850	--	13,204	61,230	31,611	15,805
WILKES	370,646	6,689	85,384	195,814	82,759	--
YANCEY	145,477	--	32,342	108,324	--	4,811
TOTAL	4,014,566	25,309	669,022	2,470,242	799,753	50,240

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.--VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1974

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET[1]				
ALLEGHANY	247,372	--	8,879	58,546	179,947	82,574	--	2,908	22,097	57,569
ASHE	439,187	3,874	35,869	60,174	399,270	171,110	3,013	8,295	27,201	132,601
AVERY	360,642	--	45,875	167,422	147,345	161,963	1,592	12,476	70,191	77,704
BUNCOMBE	1,161,067	71,643	50,409	255,025	783,990	373,554	32,219	9,482	85,661	246,192
BURKE	849,037	243,189	214,380	96,570	294,898	315,124	104,897	49,947	44,043	116,237
CALDWELL	1,042,167	161,892	331,543	137,810	410,922	362,230	45,555	76,376	60,719	179,580
CHEROKEE	718,386	173,980	75,606	85,181	383,619	270,600	54,801	24,678	39,055	152,066
CLAY	371,779	86,646	--	22,972	262,161	145,200	49,938	359	13,312	81,591
GRAHAM	841,391	48,824	217,009	178,942	396,616	244,724	13,235	42,022	65,438	124,029
HAYWOOD	1,022,427	60,997	75,469	279,978	605,983	334,027	17,065	29,773	100,557	186,632
HENDERSON	791,699	45,695	180,282	145,236	420,486	254,167	23,461	39,814	51,221	139,671
JACKSON	1,069,009	32,475	118,280	243,280	674,974	361,435	9,682	27,309	95,068	229,376
MCDOWELL	930,668	145,681	69,320	147,362	568,305	327,621	49,988	16,438	59,861	201,334
MACON	1,129,448	60,586	155,017	232,221	681,624	375,741	20,201	31,889	90,371	233,280
MADISON	1,064,108	106,080	188,256	293,185	476,587	367,933	48,657	40,002	99,198	180,076
MITCHELL	578,083	--	67,287	196,954	313,842	211,482	506	17,126	76,319	117,531
SWAIN	315,951	43,259	--	56,324	216,368	122,671	28,870	279	20,640	72,882
TRANSYLVANIA	757,937	42,762	49,336	179,566	486,273	268,883	11,654	17,777	76,174	163,278
WATAUGA	446,485	--	88,163	121,276	237,046	161,369	--	23,290	50,113	87,966
WILKES	1,391,982	409,305	250,086	292,940	439,651	549,543	175,156	59,237	135,852	179,298
YANCEY	1,012,089	--	222,136	265,039	524,914	299,638	1,118	47,797	81,761	168,962
TOTAL	16,600,914	1,736,888	2,443,202	3,516,003	8,904,821	5,761,589	691,608	577,274	1,364,852	3,127,855

[1] FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1973*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALLEGHANY	8,899	--	852	2,756	5,291	2,738	--	163	885	1,690
ASHE	20,720	273	1,832	4,271	14,344	7,184	149	416	1,030	5,589
AVERY	24,457	553	3,888	13,012	7,004	6,738	38	679	3,570	2,451
BUNCOMBE	44,940	5,297	1,878	15,617	22,148	12,910	1,258	730	4,280	6,642
BURKE	46,505	19,681	12,054	6,167	8,603	12,965	4,964	2,485	2,262	3,254
CALDWELL	47,984	5,875	16,779	9,163	16,167	14,442	1,968	3,740	3,321	5,413
CHEROKEE	43,989	6,699	7,148	11,228	18,914	13,380	2,273	2,306	3,392	5,409
CLAY	17,472	8,623	--	1,606	7,243	5,901	3,078	30	594	2,199
GRAHAM	24,338	1,467	6,550	6,723	9,598	8,157	364	1,391	3,031	3,371
HAYWOOD	47,032	3,277	7,127	17,140	19,488	12,593	443	2,055	3,820	6,275
HENDERSON	33,172	2,767	7,257	11,875	11,273	9,177	998	1,704	2,225	4,250
JACKSON	43,883	938	4,922	13,464	24,559	13,257	300	1,239	5,323	6,395
MCDOWELL	41,771	7,782	3,385	9,721	20,883	11,893	1,714	797	3,686	5,696
MACON	51,626	3,194	7,519	19,621	21,292	13,423	633	1,327	4,571	6,892
MADISON	53,615	8,019	9,278	19,459	16,859	14,104	1,860	1,912	4,966	5,366
MITCHELL	31,436	--	3,739	14,172	13,525	8,543	26	865	3,966	3,686
SWAIN	13,230	3,043	--	3,561	6,626	5,163	1,258	11	1,136	2,758
TRANSYLVANIA	32,376	1,400	4,747	8,371	17,858	10,005	342	1,488	3,393	4,782
WATAUGA	26,133	--	3,741	11,323	11,069	6,231	--	742	2,670	2,819
WILKES	78,065	23,820	15,833	20,906	17,506	25,960	9,392	3,438	8,092	5,038
YANCEY	35,470	390	6,134	11,731	17,215	9,136	53	1,464	3,032	4,587
TOTAL	767,113	103,098	124,663	231,887	307,465	223,900	31,111	28,982	69,245	94,562

TABLE 9. --ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1973

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
ALLEGHANY	4,294	--	--	--	4,294	923	--	--	--	923
ASHE	15,510	--	1,640	6,483	7,387	4,313	--	303	1,703	2,307
AVERY	15,898	--	7,490	3,654	4,754	6,551	--	1,250	2,945	2,356
BUNCOMBE	22,371	1,383	2,733	1,631	16,624	6,551	962	606	680	4,303
BURKE	45,140	13,462	11,751	3,993	15,934	12,494	3,772	2,698	1,988	4,036
CALDWELL	18,798	7,160	7,658	1,177	2,803	5,896	3,148	1,447	447	854
CHEROKEE	29,057	11,704	9,478	--	7,875	8,570	3,311	2,205	717	2,337
CLAY	1,988	--	--	--	1,988	552	187	--	--	365
GRAHAM	1,279	--	--	--	1,279	290	--	--	--	290
HAYWOOD	4,277	--	4,277	--	--	1,733	--	1,733	--	--
HENDERSON	8,972	7,188	--	1,784	--	2,083	1,532	--	330	221
JACKSON	15,837	--	--	2,554	13,283	4,997	--	--	866	4,131
MCDOWELL	5,768	835	--	1,445	3,488	2,874	798	--	591	1,485
MACON	24,037	10,306	1,145	3,280	9,306	5,281	1,792	240	609	2,640
MADISON	1,357	--	--	--	1,357	674	--	--	--	674
MITCHELL	1,170	--	--	1,170	--	344	--	--	344	--
SWAIN	--	--	--	--	--	1,505	819	--	--	686
TRANSYLVANIA	9,686	3,916	--	--	5,770	2,918	839	--	224	1,855
WATAUGA	1,593	--	--	--	1,593	386	--	--	--	386
WILKES	23,604	11,699	8,754	1,559	1,592	7,587	3,996	1,715	627	1,249
YANCEY	8,229	--	--	--	8,229	2,277	--	--	--	2,277
TOTAL	258,865	67,653	54,926	28,730	107,556	78,799	21,156	12,197	12,071	33,375

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1974*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
			ACRES			
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	137,897	9,838	2,039	5,285	45,102	75,633
SPRUCE-FIR	12,714	4,811	--	--	--	7,903
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	15,670	7,043	--	--	--	8,627
SHORTLEAF PINE	25,437	--	--	742	12,186	12,509
VIRGINIA PINE	210,778	6,393	--	5,188	38,162	161,035
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	56,530	34,326	9,498	--	12,706	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	459,026	62,411	11,537	11,215	108,156	265,707
HARDWOOD TYPES:						
OAK-PINE	347,539	51,062	1,319	42,873	126,368	125,917
OAK-HICKORY	2,790,865	566,072	97,236	68,575	863,951	1,195,031
CHESTNUT OAK	180,807	98,850	--	2,813	25,955	53,189
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	--	--	--	--	--	--
ELM-ASH-COTTONWOOD	6,689	--	--	--	6,689	--
MAPLE-BEECH-BIRCH	229,640	41,990	4,363	2,325	46,140	134,822
TOTAL	3,555,540	757,974	102,918	116,586	1,069,103	1,508,959
ALL TYPES	4,014,566	820,385	114,455	127,801	1,177,259	1,774,666

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1974*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
			ACRES			
NATIONAL FOREST	820,385	9,993	169,811	494,949	134,429	11,203
OTHER PUBLIC	114,455	--	4,968	86,081	23,406	--
FOREST INDUSTRY	127,801	--	40,528	75,269	12,004	--
FARMER	1,177,259	--	198,496	691,031	287,732	--
MISC. PRIVATE	1,774,666	15,316	255,219	1,122,912	342,182	39,037
ALL OWNERSHIPS	4,014,566	25,309	669,022	2,470,242	799,753	50,240

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1974*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	3,304,069	369,116	421,996	710,279	1,802,678
UPPER-STEM PORTION	525,540	47,964	54,836	119,486	303,254
TOTAL	3,829,609	417,080	476,832	829,765	2,105,932
POLETIMBER TREES	1,931,980	274,528	100,442	535,087	1,021,923
ALL GROWING-STOCK TREES	5,761,589	691,608	577,274	1,364,852	3,127,855
ROUGH TREES:					
SAWTIMBER-SIZE TREES	265,443	11,140	2,873	43,223	208,207
POLETIMBER-SIZE TREES	396,867	9,165	2,918	61,545	323,239
TOTAL	662,310	20,305	5,791	104,768	531,446
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	161,060	525	6,937	29,072	124,526
POLETIMBER-SIZE TREES	16,572	--	158	5,737	10,677
TOTAL	177,632	525	7,095	34,809	135,203
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	--	--	--	--	--
POLETIMBER-SIZE TREES	--	--	--	--	--
TOTAL	--	--	--	--	--
TOTAL, ALL TIMBER	6,601,531	712,438	590,160	1,504,429	3,794,504

TABLE 13.--*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	16,301	4,172	4,897	3,880	2,022	1,027	121	92	59	31	--
LOBLOLLY PINE	2,257	937	1,170	150	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	45,387	21,862	13,413	6,991	2,224	668	184	32	13	--	--
PITCH PINE	21,592	8,163	6,354	3,826	1,661	854	481	147	95	11	--
TABLE-MOUNTAIN PINE	2,098	805	718	53	278	165	57	--	--	22	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	25,819	5,840	7,676	4,217	2,667	2,083	1,382	894	401	554	105
EASTERN HEMLOCK	12,097	5,910	1,936	1,464	578	937	424	155	302	304	87
SPRUCE AND FIR	2,373	467	900	687	181	84	38	16	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	713	577	92	44	--	--	--	--	--	--	--
TOTAL SOFTWOODS	128,637	48,733	37,156	21,312	9,611	5,818	2,687	1,336	870	922	192
HARDWOOD:											
SELECT WHITE OAKS	27,861	10,442	6,478	3,691	2,785	1,754	856	891	432	486	46
SELECT RED OAKS	24,757	6,702	4,943	3,609	2,923	1,888	1,652	852	903	1,103	182
CHESTNUT OAK	48,756	16,551	10,302	7,544	4,864	3,706	2,480	1,104	910	1,156	139
OTHER WHITE OAKS	1,605	737	302	400	76	27	58	--	--	--	5
OTHER RED OAKS	56,688	19,435	13,135	9,320	5,920	3,790	2,423	1,321	618	663	63
HICKORY	25,679	8,545	6,024	4,414	2,611	1,813	1,034	628	295	305	10
YELLOW BIRCH	5,978	4,143	669	505	95	255	194	30	32	55	--
HARD MAPLE	6,412	3,271	987	651	486	455	158	212	74	113	5
SOFT MAPLE	38,351	18,652	8,208	5,217	3,065	1,435	927	373	229	223	22
BEECH	9,203	4,182	1,569	1,061	1,076	716	238	211	61	89	--
SWEETGUM	538	244	188	55	35	--	16	--	--	--	--
TUPELO AND BLACKGUM	5,642	1,960	1,330	980	788	252	122	76	70	64	--
ASH	4,598	1,342	1,441	409	616	291	220	179	26	74	--
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	4,665	1,171	1,181	684	807	350	322	83	49	12	6
YELLOW-POPLAR	60,526	19,500	14,446	10,138	7,523	4,674	2,300	1,003	457	480	5
BAY AND MAGNOLIA	2,552	608	630	459	191	404	152	49	25	29	5
BLACK CHERRY	2,301	740	473	428	285	239	64	32	28	12	--
BLACK WALNUT	1,066	104	424	92	315	104	--	16	--	11	--
SYCAMORE	264	--	--	264	--	--	--	--	--	--	--
BLACK LOCUST	15,726	4,798	3,994	3,208	2,170	917	299	200	61	79	--
ELM	16	--	--	--	--	--	--	16	--	--	--
OTHER EASTERN HARDWOODS	29,632	13,412	8,201	4,077	1,846	953	519	341	130	153	--
TOTAL HARDWOODS	372,816	136,539	84,925	57,206	38,477	24,023	14,034	7,617	4,400	5,107	488
ALL SPECIES	501,453	185,272	122,081	78,518	48,088	29,841	16,721	8,953	5,270	6,029	680

TABLE 14.--VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
					THOUSAND CUBIC FEET						
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	187,669	11,949	36,261	50,692	42,678	30,168	4,576	4,780	4,577	1,988	--
LOBLOLLY PINE	9,040	1,782	5,999	1,259	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	323,917	74,445	91,447	90,046	41,186	18,416	5,729	1,735	913	--	--
PITCH PINE	173,798	20,573	34,639	43,075	27,381	19,008	16,804	5,970	5,647	701	--
TABLE-MOUNTAIN PINE	18,014	2,237	4,361	461	4,730	3,145	2,064	--	--	1,016	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	410,334	21,043	50,697	50,566	48,556	53,432	48,996	40,142	23,799	54,766	18,337
EASTERN HEMLOCK	156,233	12,964	8,822	15,014	9,050	22,230	15,238	7,613	19,868	26,301	19,133
SPRUCE AND FIR	21,377	1,194	7,043	7,250	2,539	1,649	1,206	496	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	2,216	1,476	279	461	--	--	--	--	--	--	--
TOTAL SOFTWOODS	1,302,598	147,663	239,548	258,824	176,120	148,048	94,613	60,736	54,804	84,772	37,470
HARDWOOD:											
SELECT WHITE OAKS	389,409	32,259	41,275	48,166	55,881	49,520	31,153	45,372	25,723	50,806	9,254
SELECT RED OAKS	516,315	26,425	36,423	43,572	54,676	54,800	59,567	47,071	53,674	102,930	37,177
CHESTNUT OAK	762,762	49,897	73,464	97,423	96,593	106,974	90,103	58,135	54,507	110,548	25,118
OTHER WHITE OAKS	15,003	2,719	1,912	4,013	2,676	686	2,205	--	--	--	792
OTHER RED OAKS	736,913	62,962	87,186	111,160	105,171	105,815	86,522	66,831	39,246	61,062	10,958
HICKORY	363,510	28,292	39,682	49,916	56,607	55,208	44,948	35,803	20,108	29,177	3,769
YELLOW BIRCH	56,509	13,493	4,104	4,594	1,928	7,409	6,913	2,378	3,237	9,070	3,383
HARD MAPLE	94,049	12,146	7,601	7,824	10,265	13,319	8,119	11,666	6,657	10,875	5,577
SOFT MAPLE	405,925	71,044	63,872	67,442	57,871	44,571	35,298	21,779	13,946	25,538	4,564
BEECH	130,875	16,650	12,425	15,840	20,755	24,422	11,025	10,713	4,611	14,434	--
SWEETGUM	3,192	560	810	525	625	--	672	--	--	--	--
TUPELO AND BLACKGUM	78,998	9,808	9,787	11,954	15,015	9,910	6,141	4,914	4,841	6,628	--
ASH	78,177	5,860	12,078	6,838	14,174	11,270	8,655	9,728	1,406	6,548	1,620
COTTONWOOD	451	--	--	--	--	--	--	--	--	451	--
BASSWOOD	75,925	3,254	8,830	10,369	18,624	10,617	14,145	4,373	2,987	1,873	853
YELLOW-POPLAR	784,202	59,616	95,875	121,503	156,921	135,658	90,078	51,385	29,094	42,562	1,510
BAY AND MAGNOLIA	43,285	2,538	6,355	4,867	3,569	10,925	8,167	2,021	1,574	2,559	710
BLACK CHERRY	34,762	4,565	4,655	6,178	5,590	5,994	3,361	1,653	1,958	808	--
BLACK WALNUT	19,343	1,303	3,465	3,137	5,834	2,663	456	1,426	312	747	--
SYCAMORE	3,349	--	--	3,349	--	--	--	--	--	--	--
BLACK LOCUST	230,259	23,162	41,117	45,499	45,250	30,988	16,271	13,453	4,942	9,577	--
ELM	961	--	--	--	--	--	--	961	--	--	--
OTHER EASTERN HARDWOODS	474,759	129,916	105,387	81,267	51,581	37,347	22,439	19,055	10,200	15,525	2,042
TOTAL HARDWOODS	5,298,933	556,469	656,303	745,436	779,606	718,096	546,238	408,717	279,023	501,718	107,327
ALL SPECIES	6,601,531	704,132	895,851	1,004,260	955,726	866,144	640,851	469,453	333,827	586,490	144,797

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	184,930	11,949	34,772	49,865	42,255	30,168	4,576	4,780	4,577	1,988	--
LOBLOLLY PINE	9,040	1,782	5,999	1,259	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	311,453	70,475	89,066	87,133	39,625	16,777	5,729	1,735	913	--	--
PITCH PINE	168,537	20,375	33,878	39,492	26,922	19,008	16,804	5,970	5,387	701	--
TABLE-MOUNTAIN PINE	17,648	2,237	3,995	461	4,730	3,145	2,064	--	--	1,016	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	406,639	20,544	50,368	50,264	48,185	53,432	48,705	40,142	22,245	54,766	17,988
EASTERN HEMLOCK	148,967	12,641	8,822	14,364	8,486	22,230	13,992	6,711	18,382	26,301	17,038
SPRUCE AND FIR	19,452	1,194	5,118	7,250	2,539	1,649	1,206	496	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	2,216	1,476	279	461	--	--	--	--	--	--	--
TOTAL SOFTWOODS	1,268,882	142,673	232,297	250,549	172,742	146,409	93,076	59,834	51,504	84,772	35,026
HARDWOOD:											
SELECT WHITE OAKS	351,168	27,391	38,453	42,434	51,148	48,189	30,389	40,960	25,297	40,167	6,740
SELECT RED OAKS	466,917	21,812	31,667	40,359	49,262	48,195	57,462	41,309	50,741	95,417	30,693
CHESTNUT OAK	645,856	43,003	59,811	83,137	84,038	94,654	82,614	46,396	45,514	87,118	19,571
OTHER WHITE OAKS	11,958	2,171	1,594	3,530	1,245	686	1,940	--	--	--	792
OTHER RED OAKS	679,921	55,681	80,899	103,001	99,791	96,087	85,110	61,677	35,206	52,911	9,558
HICKORY	318,998	23,803	34,634	44,127	48,287	48,516	40,430	31,364	18,555	27,205	2,077
YELLOW BIRCH	42,902	12,346	4,104	4,063	1,321	5,569	6,282	1,287	2,319	5,611	--
HARD MAPLE	80,850	10,626	6,107	7,262	9,787	13,077	7,089	11,161	4,811	9,921	1,009
SOFT MAPLE	336,666	56,514	52,868	60,190	51,370	36,424	30,087	16,433	13,052	17,001	2,727
BEECH	104,687	13,758	9,499	12,611	19,963	19,198	8,736	9,339	3,431	8,152	--
SWEETGUM	3,192	560	610	525	625	--	672	--	--	--	--
TUPELO AND BLACKGUM	54,672	5,085	7,486	9,753	12,153	5,288	3,674	3,177	3,271	4,785	--
ASH	61,980	3,016	8,713	5,135	12,200	8,768	8,146	8,407	1,406	6,189	--
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	69,203	2,564	7,469	9,199	17,652	10,490	12,501	4,373	2,987	1,115	853
YELLOW-POPLAR	769,832	57,754	91,689	119,831	154,893	135,306	89,667	49,082	29,094	41,925	591
BAY AND MAGNOLIA	38,505	1,744	4,453	4,867	3,569	10,925	6,413	2,021	1,574	2,229	710
BLACK CHERRY	27,951	2,311	3,099	4,434	5,590	5,994	2,488	1,653	1,574	808	--
BLACK WALNUT	12,610	392	2,162	1,220	4,868	2,663	--	558	--	747	--
SYCAMORE	3,349	--	--	3,349	--	--	--	--	--	--	--
BLACK LOCUST	155,118	14,242	22,961	31,527	35,283	22,001	10,742	8,340	3,831	6,191	--
ELM	961	--	--	--	--	--	--	961	--	--	--
OTHER EASTERN HARDWOODS	255,411	40,850	52,825	49,530	35,476	25,856	16,990	15,441	6,819	11,624	--
TOTAL HARDWOODS	4,492,707	395,623	521,303	640,084	698,521	637,886	501,432	353,939	249,482	419,116	75,321
ALL SPECIES	5,761,589	538,296	753,600	890,633	871,263	784,295	594,508	413,773	300,986	503,888	110,347

TABLE 16.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1974*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	608,272	178,957	186,195	150,344	24,600	27,837	27,823	12,516	--
LOBLOLLY PINE	4,386	4,386	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	571,986	294,798	159,840	75,579	27,972	8,903	4,894	--	--
PITCH PINE	493,648	124,521	112,219	92,077	91,986	34,762	33,576	4,507	--
TABLE-MOUNTAIN PINE	58,596	1,782	22,501	16,091	11,822	--	--	6,400	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	1,709,673	181,353	208,969	259,337	254,978	221,619	127,658	338,494	117,265
EASTERN HEMLOCK	677,676	48,225	35,507	105,032	71,804	36,639	103,893	161,930	114,646
SPRUCE AND FIR	53,972	25,392	11,043	8,055	6,627	2,855	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	1,881	1,881	--	--	--	--	--	--	--
TOTAL SOFTWOODS	4,180,090	861,295	736,274	706,515	489,789	332,615	297,844	523,847	231,911
HARDWOOD:									
SELECT WHITE OAKS	1,053,982	--	167,290	185,530	130,576	190,466	124,790	215,914	39,416
SELECT RED OAKS	1,608,301	--	156,274	177,555	232,434	178,125	230,882	468,481	164,550
CHESTNUT OAK	1,942,869	--	264,779	354,350	342,219	207,457	215,427	447,901	110,736
OTHER WHITE OAKS	20,970	--	4,073	2,822	9,132	--	--	--	4,943
OTHER RED OAKS	1,869,392	--	323,935	375,170	368,253	290,685	175,380	280,725	55,244
HICKORY	962,698	--	164,654	196,560	184,043	154,383	96,380	153,762	12,916
YELLOW BIRCH	92,167	--	4,951	21,745	25,406	5,359	9,903	24,803	--
HARD MAPLE	247,137	--	36,478	52,610	30,598	50,513	22,637	48,973	5,328
SOFT MAPLE	645,939	--	156,362	133,708	122,199	72,491	60,647	85,614	14,918
BEECH	262,574	--	72,260	72,395	33,823	36,903	13,772	33,421	--
SWEETGUM	5,325	--	1,936	--	3,389	--	--	--	--
TUPELO AND BLACKGUM	124,346	--	36,764	19,544	14,862	14,009	15,115	24,052	--
ASH	186,745	--	40,128	33,603	34,474	38,833	6,835	32,872	--
COTTONWOOD	--	--	--	--	--	--	--	--	--
BASSWOOD	200,164	--	60,783	41,334	53,429	19,695	14,373	5,927	4,623
YELLOW-POPLAR	2,197,972	--	539,355	565,298	426,211	253,201	160,475	249,457	3,975
BAY AND MAGNOLIA	139,166	--	12,112	48,748	34,663	12,151	10,313	15,505	5,674
BLACK CHERRY	73,689	--	19,871	23,691	10,742	7,738	7,606	4,041	--
BLACK WALNUT	29,831	--	16,256	9,038	--	1,926	--	2,611	--
SYCAMORE	--	--	--	--	--	--	--	--	--
BLACK LOCUST	314,218	--	123,885	79,807	39,916	31,569	14,747	24,294	--
ELM	4,338	--	--	--	--	4,338	--	--	--
OTHER EASTERN HARDWOODS	439,001	--	120,150	97,233	68,667	66,574	30,487	55,890	--
TOTAL HARDWOODS	12,420,824	--	2,322,296	2,490,741	2,165,036	1,636,416	1,209,769	2,174,243	422,323
ALL SPECIES	16,600,914	861,295	3,058,570	3,197,256	2,654,825	1,969,031	1,507,613	2,698,090	654,234

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	31,111	21,156
EASTERN WHITE PINE	22,442	10,707
SPRUCE AND FIR	537	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	6,003	1,490
TOTAL SOFTWOODS	60,093	33,353
HARDWOOD:		
SELECT WHITE AND RED OAKS	24,566	11,042
OTHER WHITE AND RED OAKS	37,743	14,031
HICKORY	7,095	3,197
YELLOW BIRCH	1,776	766
HARD MAPLE	3,265	--
SWEETGUM	231	--
ASH,WALNUT, AND BLACK CHERRY	4,535	2,257
YELLOW-POPLAR	48,304	6,417
TUPELO AND BLACKGUM	802	855
BAY AND MAGNOLIA	1,102	1,212
OTHER EASTERN HARDWOODS	34,388	5,669
TOTAL HARDWOODS	163,807	45,446
ALL SPECIES	223,900	78,799

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	103,098	67,653
EASTERN WHITE PINE	102,003	46,291
SPRUCE AND FIR	2,421	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	20,239	8,635
TOTAL SOFTWOODS	227,761	122,579
HARDWOOD:		
SELECT WHITE AND RED OAKS	94,162	34,251
OTHER WHITE AND RED OAKS	129,239	50,610
HICKORY	24,433	8,682
YELLOW BIRCH	1,525	3,382
HARD MAPLE	11,283	--
SWEETGUM	231	--
ASH,WALNUT, AND BLACK CHERRY	13,843	7,173
YELLOW-POPLAR	179,627	21,665
TUPELO AND BLACKGUM	1,950	1,177
BAY AND MAGNOLIA	3,215	--
OTHER EASTERN HARDWOODS	79,844	9,346
TOTAL HARDWOODS	539,352	136,286
ALL SPECIES	767,113	258,865

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1973*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	6,794	12,240
EASTERN WHITE PINE	1,515	4,915
SPRUCE AND FIR	204	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	--	--
TOTAL SOFTWOODS	8,513	17,155
HARDWOOD:		
SELECT WHITE AND RED OAKS	2,630	9,981
OTHER WHITE AND RED OAKS	7,460	19,936
HICKORY	2,158	8,873
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	--	--
ASH,WALNUT, AND BLACK CHERRY	2,274	1,884
YELLOW-POPLAR	948	1,365
TUPELO AND BLACKGUM	--	--
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	3,183	2,744
TOTAL HARDWOODS	18,653	44,783
ALL SPECIES	27,166	61,938

TABLE 20.--*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	1,615,921	139,707	157,518	324,088	994,608	1,398,080	138,126	149,091	294,722	816,141
OTHER PUBLIC	180,082	10,639	2,697	39,113	127,633	159,557	10,639	2,697	34,597	111,624
FOREST INDUSTRY	249,479	23,295	14,043	71,218	140,923	228,490	21,853	13,357	68,132	125,148
FARMER	1,817,254	191,313	136,594	411,482	1,077,865	1,585,939	185,950	135,195	378,333	886,461
MISCELLANEOUS PRIVATE	2,738,795	347,484	279,308	658,528	1,453,475	2,389,523	335,040	276,934	589,068	1,188,481
ALL OWNERSHIPS	6,601,531	712,438	590,160	1,504,429	3,794,504	5,761,589	691,608	577,274	1,364,852	3,127,855

TABLE 21.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	1,432,972	279,051	146,055	346,689	661,177	2,945,848	106,583	525,029	432,289	1,881,947
OTHER PUBLIC	192,047	34,974	2,619	33,856	120,598	276,500	--	12,996	58,443	205,061
FOREST INDUSTRY	289,506	54,546	20,390	87,418	127,152	301,077	--	45,257	70,218	185,602
FARMER	2,081,835	407,130	225,536	508,107	941,062	2,377,828	67,891	318,214	458,421	1,533,302
MISCELLANEOUS PRIVATE	3,120,761	643,589	490,194	740,570	1,246,408	3,582,540	143,124	656,912	779,992	2,002,512
ALL OWNERSHIPS	7,117,121	1,419,290	884,794	1,716,640	3,096,397	9,483,793	317,598	1,558,408	1,799,363	5,808,424

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1973*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	48,319	5,234	6,019	13,105	23,961	10,667	1,792	3,193	1,530	4,152
OTHER PUBLIC	5,749	333	438	1,765	3,213	2,775	--	1,733	--	1,042
FOREST INDUSTRY	8,603	843	521	3,582	3,657	2,686	1,945	358	383	--
FARMER	63,375	8,944	6,762	20,525	27,144	26,234	6,892	1,902	5,295	12,145
MISCELLANEOUS PRIVATE	97,854	15,757	15,242	30,268	36,587	36,437	10,527	5,011	4,863	16,036
ALL OWNERSHIPS	223,900	31,111	28,982	69,245	94,562	78,799	21,156	12,197	12,071	33,375

TABLE 23.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1973*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	179,975	24,322	27,757	50,443	77,453	43,272	10,306	11,963	5,818	15,185
OTHER PUBLIC	18,422	2,005	305	4,364	11,748	6,253	--	4,277	--	1,976
FOREST INDUSTRY	28,060	2,767	2,570	11,469	11,254	10,798	7,918	1,417	1,463	--
FARMER	209,337	26,939	27,310	67,929	87,159	65,796	12,763	9,391	9,514	34,128
MISCELLANEOUS PRIVATE	331,319	47,065	66,721	97,682	119,851	132,746	36,666	27,878	11,935	56,267
ALL OWNERSHIPS	767,113	103,098	124,663	231,887	307,465	258,865	67,653	54,926	28,730	107,556

TABLE 24.--*AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1974*

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	3,206	1,198	2,671	1,180	3,214	924	452	195	3,763	1,186	3,218	1,247
HARDWOOD	449	269	306	234	--	402	--	133	601	312	456	262
TOTAL	3,655	1,467	2,977	1,414	3,214	1,326	452	328	4,364	1,498	3,674	1,509
OTHER TIMBER:												
SOFTWOOD	--	36	--	59	--	--	--	--	--	23	--	37
HARDWOOD	--	68	--	105	--	43	--	--	--	62	--	63
TOTAL	--	104	--	164	--	43	--	--	--	85	--	100
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	2,107	685	3,320	804	--	--	1,336	535	1,706	691	2,119	665
HARDWOOD	1,353	622	1,125	532	--	--	815	593	1,507	631	1,508	672
TOTAL	3,460	1,307	4,445	1,336	--	--	2,151	1,128	3,213	1,322	3,627	1,337
OTHER TIMBER:												
SOFTWOOD	--	13	--	--	--	--	--	35	--	16	--	8
HARDWOOD	--	107	--	83	--	--	--	40	--	155	--	93
TOTAL	--	120	--	83	--	--	--	75	--	171	--	101
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	626	154	790	177	296	72	559	106	475	129	654	166
HARDWOOD	3,658	1,293	4,049	1,328	4,461	1,530	3,942	1,515	3,712	1,337	3,314	1,209
TOTAL	4,284	1,447	4,839	1,505	4,757	1,602	4,501	1,621	4,187	1,466	3,968	1,375
OTHER TIMBER:												
SOFTWOOD	--	4	--	7	--	--	--	6	--	3	--	4
HARDWOOD	--	230	--	244	--	216	--	155	--	232	--	228
TOTAL	--	234	--	251	--	216	--	161	--	235	--	232
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	--
HARDWOOD	--	632	--	--	--	--	--	--	--	632	--	--
TOTAL	--	632	--	--	--	--	--	--	--	632	--	--
OTHER TIMBER:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	--
HARDWOOD	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL	--	--	--	--	--	--	--	--	--	--	--	--
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	1,041	316	1,123	305	502	132	754	221	930	293	1,126	356
HARDWOOD	3,094	1,119	3,531	1,181	4,145	1,450	2,952	1,213	3,141	1,154	2,776	1,035
TOTAL	4,135	1,435	4,654	1,486	4,647	1,582	3,706	1,434	4,071	1,447	3,902	1,391
OTHER TIMBER:												
SOFTWOOD	--	8	--	11	--	--	--	13	--	6	--	9
HARDWOOD	--	201	--	221	--	204	--	118	--	205	--	195
TOTAL	--	209	--	232	--	204	--	131	--	211	--	204
ALL TIMBER	4,135	1,644	4,654	1,718	4,647	1,786	3,706	1,565	4,071	1,658	3,902	1,595

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1955, 1964, AND 1974*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1964-1974
	1955	1964	1974	
	- - - - - - - - - *ACRES* - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	1,024,800	1,056,946	806,565	-250,381
HARDWOOD TYPES	2,966,200	2,988,249	3,208,001	+219,752
TOTAL	3,991,000	4,045,195	4,014,566	- 30,629
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	319,300	353,200	406,056	+ 52,856
UNPRODUCTIVE	41,900	10,603	12,058	+ 1,455
TOTAL	361,200	363,803	418,114	+ 54,311
NONFOREST LAND:				
CROPLAND	665,900	425,502	301,712	-123,790
PASTURE AND RANGE	458,900	535,234	583,610	+ 48,376
OTHER	157,700	262,750	313,814	+ 51,064
TOTAL	1,282,500	1,223,486	1,199,136	- 24,350
ALL LAND'	5,634,700	5,632,484	5,631,816	- 668

'EXCLUDES ALL WATER AREAS.

TABLE 26.--*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
SAWTIMBER (IN THOUSAND BOARD FEET)											
SOFTWOOD	1955	2,653,217	--	--	551,720	551,435	321,281	269,041	227,574	159,536	572,630
	1964	2,910,714	--	--	649,280	662,029	463,470	292,914	187,739	173,571	481,711
	1974	4,180,090	--	--	861,295	736,274	706,515	489,789	332,615	297,844	755,758
HARDWOOD	1955	8,229,053	--	--	--	1,464,543	1,501,254	1,338,399	1,109,173	912,795	1,902,889
	1964	9,092,396	--	--	--	1,747,218	1,723,538	1,590,030	1,167,821	940,013	1,923,776
	1974	12,420,824	--	--	--	2,322,296	2,490,741	2,165,036	1,636,416	1,209,769	2,596,566
GROWING STOCK (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1955	887,361	146,371	174,138	160,477	129,384	66,573	51,129	40,938	27,587	90,764
	1964	949,522	131,906	181,588	188,854	155,333	96,036	55,666	33,772	30,014	76,353
	1974	1,268,882	142,673	232,297	250,549	172,742	146,409	93,076	59,834	51,504	119,798
HARDWOOD	1955	3,076,046	292,503	391,143	467,048	440,464	384,444	309,958	239,925	188,244	362,317
	1964	3,428,816	348,064	431,599	501,312	525,479	441,367	368,233	252,611	193,857	366,294
	1974	4,492,707	395,623	521,303	640,084	698,521	637,886	501,432	353,939	249,482	494,437
ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1955	911,275	151,271	179,533	165,680	131,957	67,320	51,973	41,570	29,375	92,596
	1964	974,733	136,319	187,209	194,968	158,420	97,125	56,586	34,279	31,947	77,880
	1974	1,302,598	147,663	239,548	258,824	176,120	148,048	94,613	60,736	54,804	122,242
HARDWOOD	1955	3,643,456	410,935	492,440	543,960	491,744	432,853	337,698	277,023	210,531	446,272
	1964	4,060,675	488,994	543,367	583,868	586,664	496,958	401,169	291,694	216,776	451,185
	1974	5,298,933	556,469	656,303	745,436	779,606	718,096	546,238	408,717	279,023	609,045

[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

★ G P O 1978—740-271 / 5584, REGION NO 4

Cost, Noel D.

1975. Forest statistics for the Mountain Region of North Carolina, 1974. USDA For. Serv. Resour. Bull. SE-31, 33 p. Southeast. For. Exp. Stn., Asheville, N.C.

Volumes of softwood and hardwood growing stock, which had been increasing slightly before 1964, have increased by 34 and 31 percent since 1964. Area of commercial forest land in the Mountain Region of North Carolina has remained about the same and now totals 4.0 million acres, or 71 percent of the total land area. There has been a relatively low level of forest activity in this 21-county area. In the latest Forest Survey, almost 8 out of every 10 acres now classified as commercial forest showed no evidence of treatment or major disturbance in the last 10 years. In 1973, net annual growth averaged 56 cubic feet per acre of commercial forest land, almost three times the volume of annual timber removals.

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Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

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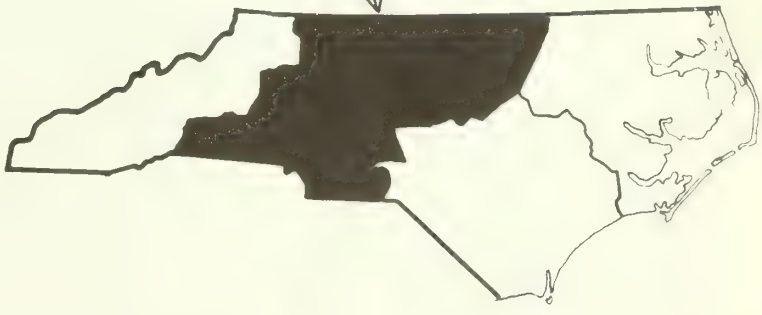

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Piedmont of North Carolina. The inventory was started in May 1974 and completed in January 1975. Three previous inventories, completed in 1937, 1956, and 1964, provide statistics for measuring changes and trends over the past 38 years. In this report, the primary emphasis is on the changes and trends since 1964.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 35-county area covered by this report is one of four survey units in North Carolina. Similar reports, USDA Forest Service Resource Bulletins SE-26, 30, and 31, have been issued for the Southern Coastal Plain, Northern Coastal Plain, and Mountains, along with an interim summary of some of the State totals. A final State report will present an in-depth analysis of the findings and should be available within one year.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the North Carolina Forest Service of the State Department of Natural and Economic Resources and by the Weyerhaeuser Company in the collection of the field data. Appreciation is also expressed for the excellent cooperation of other public agencies and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Piedmont of North Carolina
1975

by
Richard L. Welch, Resource Analyst

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HIGHLIGHTS

Since 1964 in the Piedmont of North Carolina--

--the area of commercial forest land has increased only slightly. The forest acreage in this region has steadily increased since the initial survey in 1937. However, the reversion of some 472,000 acres of idle farmland to forest since 1964 has little more than offset the diversion of 460,000 acres of timberland to other uses. More than half of the forest diversion was attributed to urban development. Commercial forest land occupied 6 million acres, or 57 percent, of the total land area in 1975.

--the area of commercial forest has changed from predominantly pine lands to predominantly hardwood lands. The area of pine forest types has dropped 2 percent despite the fact that 84 percent of the idle farmland reverted to pine types and only 36 percent of the diverted acreage was formerly in pine types. This decrease indicates that there has been substantial encroachment of hardwoods on pine acres that have been harvested without prompt or adequate regeneration.

--only minor changes have occurred in commercial forest ownership. Farmer-owned woodlands decreased by 175,000 acres, while other private ownerships increased by 123,000 acres. Together, farmer-owned and other privately owned woodlands make up 94 percent of the total commercial forest. The acreage of forest land owned by the public and that owned or held under long-term lease by forest industries have both increased slightly.

--about 32 percent of the land remaining in commercial forest has been treated or significantly disturbed. More than 874,000 acres have been harvested, and 657,000 acres have undergone intermediate cutting. Less than 10 percent of the acreage harvested since 1964 has subsequently been artificially regenerated. Almost 144,000 acres have been significantly disturbed by insects, wildfire, or diseases.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 54 to 68 square feet per acre of commercial forest land. Despite this increase in average basal area, 885,000 acres were classified as either nonstocked or poorly stocked with growing-stock trees.

--volume of softwood growing stock has increased from 2.6 to 3.4 billion cubic feet, or by 29 percent. This increase in softwood inventory reversed past trends and is attributed to a reduction in softwood removals and growth gains from young pine stands which

have developed on idle farmland. Most of the gains came from loblolly pine and Virginia pine. Volume of shortleaf pine, the region's leading species, was down by 5 percent. The volume of softwood sawtimber has increased by 37 percent, or almost 2.4 billion board feet.

--volume of hardwood growing stock has increased from 3.4 to 4.5 billion cubic feet, or by 32 percent. This large increase indicates that the strong encroachment of hardwoods on upland sites, which had supported pine, has accelerated. All of the major hardwood species registered gains in volume. Yellow-poplar, sweetgum, and the oaks registered the largest gains and made up 73 percent of the volume of hardwood growing stock. The volume of hardwood sawtimber increased by 39 percent, or 3.4 billion board feet.

In 1974--

--net growth of growing stock averaged 70 cubic feet per acre of commercial forest land and totaled 423 million cubic feet. The growth rate in this region is by far the highest in the State, but it is in line with the rates found in Piedmont regions of other states where the rate of ingrowth is exceptionally high and the species composition is similar. Net growth on hardwoods accounted for 52 percent of the total and exceeded removals by 79 percent. Net growth of softwoods exceeded removals by 57 percent. The total net growth of all species included 1,403 million board feet of sawtimber.

--removals from growing stock totaled 251 million cubic feet and included 814 million board feet of sawtimber. Softwood removals were down in comparison with findings of previous surveys. This reduction may in part reflect the current economic recession, but it more likely reflects a gradual response to the apparent overcut identified in each of the three previous surveys. Hardwood removals were up slightly as timber utilization shifted from softwoods to more abundant hardwoods. Softwoods still provided more than half the removals.

--mortality of growing stock totaled 46 million cubic feet and included 84 million board feet of sawtimber. About two-thirds of the mortality was softwood and probably was largely the result of losses to pine bark beetles. Altogether, mortality reduced gross growth by about 10 percent. Over half the mortality volume was classified as salvable.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily for States and Survey Units. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 35,752 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 2,394 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 1,240 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees at 172 sample locations in the Piedmont of North Carolina, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 22 active cutting operations which will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 1,312 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records, In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	1.20
Per billion cubic feet of growing stock	5.66
Per billion cubic feet of net annual growth	1.42
Per billion cubic feet of annual removals	2.84

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
ALAMANCE	2.89	10.72	13.01	53.76
ALEXANDER	2.32	12.88	15.27	71.02
ANSON	1.67	11.06	10.67	22.00
CABARRUS	4.42	18.64	19.87	34.66
CASWELL	1.82	10.09	12.65	32.42
CATAWBA	4.00	20.06	22.80	33.76
CHATHAM	1.65	7.08	8.09	23.63
CLEVELAND	3.35	14.56	13.30	30.76
DAVIDSON	2.43	11.64	9.97	45.67
DAVIE	5.53	18.05	17.48	57.58
DURHAM	3.57	16.20	22.81	34.54
FORSYTH	4.05	12.20	11.21	35.26
FRANKLIN	3.09	14.06	11.24	30.08
GASTON	2.75	15.66	14.80	45.90
GRANVILLE	1.87	8.48	11.11	26.20
GUILFORD	3.10	11.97	11.70	45.02
IREDELL	2.86	11.13	17.06	35.48
LINCOLN	4.57	12.68	14.00	36.11
MECKLENBURG	4.66	17.78	16.80	42.14
MONTGOMERY	2.29	7.45	6.69	24.97
ORANGE	4.52	11.37	12.68	28.08
PERSON	2.23	15.33	19.37	26.10
POLK	4.43	16.18	14.74	57.08
RANDOLPH	2.20	7.66	7.56	21.51
ROCKINGHAM	2.50	9.46	10.97	38.62
ROWAN	2.82	11.20	10.49	46.18
RUTHERFORD	2.40	8.35	8.84	26.22
STANLY	2.82	12.68	12.62	46.81
STOKES	2.91	14.02	14.19	27.42
SURRY	2.84	11.43	13.40	36.07
UNION	3.05	12.86	14.56	27.79
VANCE	2.93	12.73	15.79	42.25
WAKE	2.21	8.06	8.03	21.32
WARREN	2.11	12.30	11.33	27.69
YADKIN	3.09	15.06	14.35	44.15
UNIT TOTAL	0.49	2.02	2.19	5.67

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to pole-timber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtim-ber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.6	61.0	68.2	60.0
8	68.4	68.1	76.0	68.4
10	73.3	73.1	81.4	73.4
12	76.5	76.7	85.2	76.4
14	78.8	79.4	88.2	78.4
16	80.3	81.6	90.4	79.8
18	81.4	83.3	92.3	80.8
20	82.1	84.8	93.8	81.5
22	82.6	86.0	95.1	82.1
24+	83.5	88.1	97.9	83.0
AVERAGE	72.9	71.5	77.4	73.8

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1975*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
ALAMANCE	273,334	134,454	134,442	--	12	138,880
ALEXANDER	168,072	108,290	108,282	--	8	59,782
ANSON	341,957	233,794	233,794	--	--	108,163
CABARRUS	232,123	104,783	104,783	--	--	127,340
CASWELL	273,460	178,640	178,640	--	--	94,820
CATAWBA	256,831	115,461	115,461	--	--	141,370
CHATHAM	453,760	327,980	327,980	--	--	125,780
CLEVELAND	299,520	130,312	130,302	--	10	169,208
DAVIDSON	354,301	190,354	190,345	--	9	163,947
DAVIE	169,600	76,249	76,249	--	--	93,351
DURHAM	189,440	113,746	113,746	--	--	75,694
FORSYTH	268,160	114,967	114,768	--	199	153,193
FRANKLIN	314,240	192,623	192,623	--	--	121,617
GASTON	229,362	125,220	124,264	--	956	104,142
GRANVILLE	345,345	218,298	218,298	--	--	127,047
GUILFORD	419,530	199,384	198,693	--	691	220,146
IREDELL	370,539	170,594	169,266	--	1,328	199,945
LINCOLN	190,608	90,703	90,695	--	8	99,905
MECKLENBURG	339,318	152,714	152,326	--	388	186,604
MONTGOMERY	313,677	249,364	248,731	--	633	64,313
ORANGE	256,000	150,519	150,303	--	216	105,481
PERSON	254,502	160,831	160,831	--	--	93,671
POLK	152,753	111,541	111,541	--	--	41,212
RANDOLPH	510,720	317,147	316,013	--	1,134	193,573
ROCKINGHAM	364,160	231,197	231,197	--	--	132,963
ROWAN	333,132	153,231	153,149	--	82	179,901
RUTHERFORD	360,974	253,859	253,859	--	--	107,115
STANLY	256,338	125,211	121,124	--	4,087	131,127
STOKES	292,480	194,035	189,985	--	4,050	98,445
SURRY	343,040	214,263	213,345	--	918	128,777
UNION	408,960	186,103	186,077	--	26	222,857
VANCE	162,701	99,343	99,343	--	--	63,358
WAKE	547,960	311,819	306,332	--	5,487	236,141
WARREN	274,581	202,754	202,754	--	--	71,827
YADKIN	216,320	108,452	108,452	--	--	107,868
TOTAL	10,537,798	6,048,235	6,027,993	--	20,242	4,489,563

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 90,247 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1975*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY[1]	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
ALAMANCE	134,442	--	--	277	939	1,404	81,121	--	50,701
ALEXANDER	108,282	--	--	--	12	5,271	65,052	--	37,947
ANSON	233,794	--	2,261	104	107	28,862	93,016	11,715	97,729
CABARRUS	104,783	--	--	--	374	--	40,605	--	63,804
CASWELL	178,640	--	--	13,161	150	2,218	140,480	242	22,389
CATAWBA	115,461	--	--	30	629	514	51,427	17,144	45,717
CHATHAM	327,980	--	23,152	325	244	31,255	169,735	16,102	87,167
CLEVELAND	130,302	--	--	--	639	1,672	83,826	25,536	18,629
DAVIDSON	190,345	959	--	--	208	1,698	85,450	10,512	91,518
DAVIE	76,249	--	--	--	--	332	50,571	4,214	21,132
DURHAM	113,746	--	207	3,421	1,742	1,894	42,055	26,283	38,144
FORSYTH	114,768	--	3	--	1,567	--	17,414	21,769	74,015
FRANKLIN	192,623	--	--	25	35	10,989	165,512	--	16,062
GASTON	124,264	--	--	116	744	167	41,077	22,822	59,338
GRANVILLE	218,298	--	2,592	10,636	27	8,102	158,911	4,182	33,848
GUILFORD	198,693	--	30	371	3,816	758	87,173	9,686	96,859
IREDELL	169,266	--	--	25	129	936	87,112	25,065	55,999
LINCOLN	90,695	--	--	20	95	1,030	53,729	--	35,821
MECKLENBURG	152,326	--	--	560	2,565	--	28,877	19,252	101,072
MONTGOMERY	248,731	35,733	--	--	447	15,099	89,672	28,666	79,114
ORANGE	150,303	--	--	1,683	395	2,359	95,407	5,022	45,437
PERSON	160,831	--	--	--	459	4,694	123,808	9,904	21,966
POLK	111,541	--	--	4,401	64	13,010	22,375	9,045	62,646
RANDOLPH	316,013	8,364	--	--	1,449	1,628	151,247	767	152,558
ROCKINGHAM	231,197	--	--	400	316	459	169,078	8,915	52,029
ROWAN	153,149	--	3	512	200	753	93,238	11,655	46,788
RUTHERFORD	253,859	--	--	--	522	22,792	72,171	24,344	134,030
STANLY	121,124	--	--	--	257	2,018	108,034	526	10,289
STOKES	189,985	--	--	--	110	995	76,395	4,630	107,855
SURRY	213,345	--	--	--	775	--	158,194	--	54,376
UNION	186,077	--	--	4	507	1,711	120,392	17,599	45,864
VANCE	99,343	--	8,998	--	74	2,117	82,677	--	5,477
WAKE	306,332	--	1,350	1,958	1,100	6,245	105,966	54,454	135,259
WARREN	202,754	--	770	--	--	25,449	125,602	--	50,933
YADKIN	108,452	--	--	30	49	853	65,706	--	41,814
TOTAL	6,027,993	45,056	39,366	38,059	20,746	197,284	3,203,105	390,051	2,094,326

[1]NOT INCLUDING 39,896 ACRES OF FARMER-OWNED AND MISCELLANEOUS PRIVATE LANDS LEASED TO FOREST INDUSTRY.

TABLE 3. --*AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1975*

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
ALAMANCE	134,442	--	--	--	36,706	15,211	52,105	25,350	5,070	--
ALEXANDER	108,282	--	--	--	39,704	7,178	61,400	--	--	--
ANSON	233,794	--	--	--	116,208	20,931	92,427	--	4,228	--
CABARRUS	104,783	--	--	--	23,576	11,600	69,607	--	--	--
CASWELL	178,640	--	--	--	64,353	35,267	61,460	8,780	8,780	--
CATAWBA	115,461	--	--	--	34,945	17,144	51,944	5,714	5,714	--
CHATHAM	327,980	--	--	--	120,255	35,340	121,137	10,376	40,872	--
CLEVELAND	130,302	--	--	--	64,464	18,628	47,210	--	--	--
DAVIDSON	190,345	--	--	--	46,739	10,053	113,446	5,026	15,081	--
DAVIE	76,249	--	--	--	25,284	4,277	38,260	--	8,428	--
DURHAM	113,746	--	--	--	31,292	27,993	33,435	5,257	15,769	--
FORSYTH	114,768	--	--	--	27,694	8,708	65,305	8,707	4,354	--
FRANKLIN	192,623	--	--	--	97,330	20,062	65,200	--	10,031	--
GASTON	124,264	--	--	--	50,376	22,821	46,503	--	4,564	--
GRANVILLE	218,298	--	--	--	79,588	28,819	71,091	38,800	--	--
GUILFORD	198,693	--	--	--	76,861	29,058	78,246	--	14,528	--
IREDELL	169,266	--	--	--	63,335	24,890	81,041	--	--	--
LINCOLN	90,695	--	--	--	35,937	13,431	36,850	--	4,477	--
MECKLENBURG	152,326	--	--	--	52,943	28,878	65,692	--	4,813	--
MONTGOMERY	248,731	--	--	--	77,246	55,383	116,102	--	--	--
ORANGE	150,303	--	--	--	45,435	29,544	60,258	--	15,066	--
PERSON	160,831	--	--	--	37,014	34,666	74,295	9,904	4,952	--
POLK	111,541	--	--	--	42,391	22,374	46,776	--	--	--
RANDOLPH	316,013	--	--	--	62,584	20,863	232,566	--	--	--
ROCKINGHAM	231,197	--	--	--	86,954	35,399	91,501	--	17,343	--
ROWAN	153,149	--	--	--	59,195	--	93,954	--	--	--
RUTHERFORD	253,859	--	--	--	99,479	39,884	114,496	--	--	--
STANLY	121,124	--	--	--	33,411	5,144	77,424	--	5,145	--
STOKES	189,985	--	--	--	64,044	13,482	107,965	--	4,494	--
SURRY	213,345	4,944	--	--	39,549	54,378	109,530	--	4,944	--
UNION	186,077	--	--	--	65,176	11,466	97,970	--	11,465	--
VANCE	99,343	--	--	--	57,173	8,167	25,836	8,167	--	--
WAKE	306,332	--	--	--	120,855	38,533	97,678	44,450	4,816	--
WARREN	202,754	--	--	--	65,015	65,865	53,139	--	18,735	--
YADKIN	108,452	--	--	--	47,787	11,946	36,772	--	11,947	--
TOTAL	6,027,993	4,944	--	--	2,090,898	827,383	2,688,621	170,531	245,616	--

TABLE 4.--*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1975*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
ALAMANCE	134,442	72,197	45,631	16,614	--
ALEXANDER	108,282	41,473	39,704	27,105	--
ANSON	233,794	44,543	71,771	117,480	--
CABARRUS	104,783	34,804	35,175	34,804	--
CASWELL	178,640	52,677	61,604	64,359	--
CATAWBA	115,461	39,999	35,460	22,858	17,144
CHATHAM	327,980	131,516	155,856	36,020	4,588
CLEVELAND	130,302	23,285	68,088	29,614	9,315
DAVIDSON	190,345	55,291	77,300	57,754	--
DAVIE	76,249	21,134	29,831	25,284	--
DURHAM	113,746	47,310	33,281	33,155	--
FORSYTH	114,768	32,047	47,891	34,830	--
FRANKLIN	192,623	80,309	60,187	52,127	--
GASTON	124,264	41,938	41,247	36,515	4,564
GRANVILLE	218,298	80,884	95,727	41,687	--
GUILFORD	198,693	72,645	67,933	58,115	--
IREDELL	169,266	62,220	69,711	31,112	6,223
LINCOLN	90,695	41,327	35,820	13,548	--
MECKLENBURG	152,326	56,067	28,877	62,569	4,813
MONTGOMERY	248,731	116,974	105,384	26,373	--
ORANGE	150,303	74,739	55,237	20,327	--
PERSON	160,831	34,667	64,838	56,374	4,952
POLK	111,541	50,019	30,197	31,325	--
RANDOLPH	316,013	99,092	151,660	65,261	--
ROCKINGHAM	231,197	39,016	135,103	57,078	--
ROWAN	153,149	75,755	42,428	34,966	--
RUTHERFORD	253,859	96,589	118,221	39,049	--
STANLY	121,124	41,156	33,413	46,555	--
STOKES	189,985	67,519	55,058	67,408	--
SURRY	213,345	69,985	84,038	54,378	4,944
UNION	186,077	45,863	86,906	53,308	--
VANCE	99,343	52,579	34,313	12,451	--
WAKE	306,332	179,192	88,776	38,364	--
WARREN	202,754	67,814	67,042	67,898	--
YADKIN	108,452	42,667	47,865	11,947	5,973
TOTAL	6,027,993	2,185,292	2,301,573	1,478,612	62,516

TABLE 5.--*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1975*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
ALAMANCE	134,442	--	--	5,070	98,952	30,420
ALEXANDER	108,282	--	--	5,421	77,663	25,198
ANSON	233,794	--	8,351	33,615	158,488	33,340
CABARRUS	104,783	--	--	17,401	75,781	11,601
CASWELL	178,640	--	--	13,170	125,282	40,188
CATAWBA	115,461	--	--	11,428	69,746	34,287
CHATHAM	327,980	--	4,588	39,928	260,527	22,937
CLEVELAND	130,302	--	--	13,971	88,389	27,942
DAVIDSON	190,345	--	--	20,106	123,302	46,937
DAVIE	76,249	--	--	8,429	59,392	8,428
DURHAM	113,746	--	5,256	26,283	80,289	1,918
FORSYTH	114,768	--	4,354	--	88,645	21,769
FRANKLIN	192,623	--	--	60,186	122,407	10,030
GASTON	124,264	--	4,564	27,553	78,453	13,694
GRANVILLE	218,298	--	5,345	54,364	133,498	25,091
GUILFORD	198,693	--	--	28,432	155,733	14,528
IREDELL	169,266	--	--	37,333	131,933	--
LINCOLN	90,695	--	--	13,432	77,263	--
MECKLENBURG	152,326	--	--	32,003	67,381	52,942
MONTGOMERY	248,731	--	--	22,971	155,255	70,505
ORANGE	150,303	--	--	32,209	103,030	15,064
PERSON	160,831	--	--	14,858	104,007	41,966
POLK	111,541	--	--	33,448	60,194	17,899
RANDOLPH	316,013	--	--	10,432	227,348	78,233
ROCKINGHAM	231,197	--	--	21,922	170,257	39,018
ROWAN	153,149	--	--	34,965	88,880	29,304
RUTHERFORD	253,859	--	--	15,465	193,355	45,039
STANLY	121,124	--	--	--	74,298	46,826
STOKES	189,985	--	--	28,094	143,915	17,976
SURRY	213,345	4,944	--	29,663	134,248	44,490
UNION	186,077	--	--	28,664	117,283	40,130
VANCE	99,343	--	5,167	8,166	70,508	15,502
WAKE	306,332	--	4,816	106,945	175,306	19,265
WARREN	202,754	--	--	46,541	132,061	24,152
YADKIN	108,452	--	--	--	90,532	17,920
TOTAL	6,027,993	4,944	42,441	882,468	4,113,601	984,539

TABLE 6.--*AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1975*

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
				ACRES		
ALAMANCE	134,442	6,286	20,281	72,385	35,490	--
ALEXANDER	108,282	--	16,275	61,388	30,619	--
ANSON	233,794	12,579	73,654	126,526	21,035	--
CABARRUS	104,783	6,174	23,203	63,805	11,601	--
CASWELL	178,640	--	59,966	105,504	13,170	--
CATAWBA	115,461	5,714	29,085	40,660	22,858	17,144
CHATHAM	327,980	13,764	168,094	98,720	42,814	4,588
CLEVELAND	130,302	--	30,193	67,509	23,285	9,315
DAVIDSON	190,345	--	37,646	127,565	25,134	--
DAVIE	76,249	--	16,856	50,965	8,428	--
DURHAM	113,746	1,742	34,808	52,565	24,631	--
FORSYTH	114,768	--	32,048	65,306	17,414	--
FRANKLIN	192,623	5,016	82,282	95,295	10,030	--
GASTON	124,264	167	45,646	50,206	23,681	4,564
GRANVILLE	218,298	8,362	92,264	99,781	17,891	--
GUILFORD	198,693	9,686	83,089	81,704	24,214	--
IREDELL	169,266	1,267	43,555	105,776	12,445	6,223
LINCOLN	90,695	13,433	31,344	32,486	13,432	--
MECKLENBURG	152,326	4,813	75,320	52,942	14,438	4,813
MONTGOMERY	248,731	--	77,800	138,904	32,027	--
ORANGE	150,303	5,021	45,439	84,779	15,064	--
PERSON	160,831	4,953	44,570	89,151	17,205	4,952
POLK	111,541	96	39,040	54,505	17,900	--
RANDOLPH	316,013	--	93,878	166,834	55,301	--
ROCKINGHAM	231,197	4,335	99,961	100,429	26,472	--
ROWAN	153,149	11,822	48,089	81,584	11,654	--
RUTHERFORD	253,859	--	68,028	135,637	50,194	--
STANLY	121,124	--	27,742	72,547	20,835	--
STOKES	189,985	8,987	46,181	89,877	44,940	--
SURRY	213,345	4,944	50,208	123,588	29,661	4,944
UNION	186,077	5,733	65,176	86,504	28,664	--
VANCE	99,343	8,240	33,430	57,673	--	--
WAKE	306,332	4,817	86,159	168,580	46,776	--
WARREN	202,754	4,831	74,676	113,586	9,661	--
YADKIN	108,452	5,973	29,946	42,667	23,893	5,973
TOTAL	6,027,993	158,755	1,925,932	3,057,933	822,857	62,516

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.--*VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*[1]				
ALAMANCE	492,421	154,526	3,557	113,742	220,596	174,683	62,919	1,315	43,310	67,139
ALEXANDER	301,024	116,484	8,174	55,359	121,007	129,066	49,872	3,222	25,672	50,300
ANSON	609,481	429,385	2,417	66,236	111,443	248,017	164,950	818	35,289	46,960
CABARRUS	279,889	36,371	3,663	67,795	172,060	121,157	32,753	5,634	26,127	56,643
CASWELL	557,037	214,920	4,281	156,744	181,092	213,088	84,777	1,440	61,293	65,578
CATAWBA	361,435	93,141	--	82,239	186,055	127,494	49,915	1,043	18,185	58,351
CHATHAM	1,424,251	670,523	14,386	290,744	448,598	531,953	244,149	7,795	116,109	163,900
CLEVELAND	287,930	107,211	4,452	52,631	123,636	124,337	59,750	832	20,047	43,708
DAVIDSON	671,167	121,133	--	199,551	350,483	241,147	57,204	2,189	73,011	108,743
DAVIE	204,167	29,880	2,111	95,692	76,484	81,946	19,622	1,826	31,694	28,804
DURHAM	395,319	209,053	1,071	75,910	109,285	145,983	70,714	536	29,377	45,356
FORSYTH	324,695	60,507	878	102,886	160,424	141,315	32,015	695	44,527	64,078
FRANKLIN	1,082,980	736,692	1,406	148,199	196,683	318,285	191,654	872	58,378	67,381
GASTON	430,709	201,687	--	105,460	123,562	152,122	68,746	--	38,179	45,197
GRANVILLE	714,566	312,908	1,190	216,558	183,910	300,844	134,159	1,325	88,982	76,378
GUILFORD	926,461	266,668	1,529	313,213	345,051	325,155	119,092	1,363	98,414	106,286
IREDELL	583,232	180,252	1,942	190,959	210,079	234,840	85,002	3,363	70,636	75,839
LINCOLN	445,230	217,039	--	45,772	182,419	162,080	81,474	415	23,342	56,849
MECKLENBURG	597,678	155,428	5,318	143,315	293,617	174,970	60,187	2,494	46,728	65,561
MONTGOMERY	889,243	521,649	1,623	88,015	277,956	344,430	167,982	1,093	48,431	126,924
ORANGE	908,783	413,186	3,262	296,433	195,902	280,975	109,041	1,750	102,675	67,509
PERSON	484,486	247,082	7,492	101,989	127,923	178,486	77,301	3,923	43,824	53,438
POLK	325,797	88,747	10,270	71,150	155,630	120,176	38,342	2,280	25,842	53,712
RANDOLPH	824,505	166,733	4,711	152,706	500,355	358,182	86,971	3,164	71,692	196,355
ROCKINGHAM	443,248	132,540	--	101,948	208,760	255,014	119,443	--	51,231	84,340
ROWAN	661,282	288,002	6,766	164,206	202,308	229,838	104,698	2,842	59,989	62,309
RUTHERFORD	704,590	293,464	7,737	102,317	301,072	298,422	133,280	1,685	37,982	125,475
STANLY	355,649	113,783	2,757	49,708	189,401	138,511	53,914	904	18,215	65,478
STOKES	467,446	185,596	1,104	100,904	179,842	209,498	87,722	860	50,833	70,083
SURRY	552,888	194,426	30,476	120,766	207,220	236,998	79,062	8,995	50,592	98,349
UNION	555,667	228,474	1,851	90,951	234,391	237,065	95,440	1,929	40,355	99,341
VANCE	450,114	299,197	--	108,275	42,642	160,379	100,638	--	40,150	19,591
WAKE	1,516,650	711,954	--	442,536	362,160	484,866	222,493	517	144,351	117,505
WARREN	618,902	300,483	--	159,481	158,938	234,209	103,764	--	69,828	60,617
YADKIN	337,457	138,677	3,424	37,391	157,965	139,109	60,611	583	26,292	51,623
TOTAL	20,786,379	8,637,801	137,848	4,711,781	7,298,949	7,854,640	3,309,656	67,702	1,831,582	2,645,700

[1] FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1974*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALAMANCE	25,956	7,989	114	5,875	11,978	8,249	3,728	128	1,934	2,459
ALEXANDER	23,477	8,856	811	5,763	8,047	7,331	3,347	442	1,429	2,113
ANSON	53,411	43,341	82	3,885	6,103	17,261	12,543	244	1,694	2,780
CABARRUS	16,731	4,315	1,032	2,947	8,437	6,121	2,213	232	1,033	2,643
CASWELL	37,690	17,271	176	12,557	7,686	11,768	4,753	33	3,633	3,349
CATAWBA	23,306	10,639	--	2,365	10,302	7,147	3,781	83	652	2,631
CHATHAM	100,549	55,763	457	17,754	26,575	30,960	16,578	300	6,552	7,530
CLEVELAND	23,815	10,303	126	6,833	6,553	6,345	3,599	23	1,087	1,636
DAVIDSON	37,513	10,703	--	10,751	16,059	10,170	2,701	147	3,516	3,806
DAVIE	15,273	3,449	28	4,850	6,946	4,357	827	155	1,685	1,690
DURHAM	33,031	17,938	102	3,901	11,090	7,619	4,463	16	1,261	1,879
FORSYTH	23,930	3,992	32	11,435	8,471	7,703	2,088	136	2,677	2,802
FRANKLIN	65,151	43,711	51	11,503	9,886	17,949	11,610	26	2,748	3,565
GASTON	24,868	10,063	--	8,517	6,288	6,757	2,897	--	1,731	2,129
GRANVILLE	56,682	27,210	48	16,848	12,576	17,236	8,458	43	5,222	3,513
GUILFORD	59,006	21,557	93	19,989	17,367	17,426	7,516	37	4,957	4,916
IREDELL	48,618	14,266	567	17,272	16,513	14,826	5,739	105	6,006	2,976
LINCOLN	32,795	16,027	--	6,505	10,263	7,387	3,684	16	1,380	2,307
MECKLENBURG	23,626	8,278	292	5,144	9,912	8,199	3,746	64	2,251	2,138
MONTGOMERY	68,852	38,655	21	8,475	21,701	17,030	8,450	89	2,420	6,071
ORANGE	54,044	24,715	39	17,357	11,933	14,272	5,864	43	5,158	3,207
PERSON	25,996	12,035	481	5,600	7,880	8,583	2,894	109	2,196	3,384
POLK	18,877	5,534	558	5,246	7,539	6,379	2,718	85	1,345	2,231
RANDOLPH	57,837	13,559	420	12,535	31,323	16,242	4,248	242	3,773	7,979
ROCKINGHAM	32,612	13,004	--	8,962	10,646	17,942	10,249	--	3,673	4,020
ROWAN	36,975	20,069	340	8,083	8,483	9,883	3,711	77	3,536	2,559
RUTHERFORD	49,316	24,849	307	6,755	17,405	16,161	6,812	273	2,526	6,550
STANLY	24,829	11,019	103	2,613	11,094	6,031	2,539	109	987	2,396
STOKES	29,746	13,747	157	8,519	7,323	11,569	4,751	96	3,853	2,869
SURRY	39,763	12,544	1,342	13,298	12,579	16,417	5,840	1,623	2,878	6,076
UNION	30,431	12,857	148	3,700	13,726	12,990	5,075	355	2,164	5,396
VANCE	34,038	23,707	--	6,677	3,654	8,729	5,379	--	2,311	1,039
WAKE	103,180	55,426	--	28,054	19,700	25,533	13,510	76	7,241	4,706
WARREN	42,565	22,638	--	11,615	8,312	13,210	6,908	--	3,476	2,826
YADKIN	28,045	9,795	123	9,219	8,908	7,049	3,326	21	1,774	1,928
TOTAL	1,402,534	649,824	8,050	331,402	413,258	422,831	196,545	5,428	100,759	120,099

TABLE 9.--*ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1974*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALAMANCE	12,864	6,467	--	3,038	3,359	3,577	2,053	437	486	601
ALEXANDER	1,366	--	--	--	1,366	514	--	--	120	394
ANSON	47,579	30,948	--	5,005	11,626	15,132	9,971	--	2,069	3,092
CABARRUS	18,467	5,873	1,696	--	10,898	5,033	2,369	346	126	2,192
CASWELL	25,130	16,963	--	4,446	3,721	8,001	6,022	109	1,031	839
CATAWBA	35,278	21,201	--	8,539	5,538	9,794	5,110	119	1,811	2,754
CHATHAM	43,967	21,907	--	3,551	18,509	13,174	6,376	100	2,727	3,971
CLEVELAND	7,701	2,248	--	4,045	1,408	3,036	1,655	--	746	635
DAVIDSON	10,933	1,907	--	7,189	1,837	3,921	701	365	2,161	694
DAVIE	4,604	2,656	--	974	974	1,915	1,212	--	372	331
DURHAM	21,289	7,240	--	5,888	8,161	5,837	2,370	219	1,443	1,805
FORSYTH	20,116	5,893	--	7,353	6,870	6,962	2,120	137	2,459	2,246
FRANKLIN	37,917	29,894	--	5,371	2,652	11,985	8,310	--	2,104	1,571
GASTON	20,492	11,490	--	6,021	2,981	5,080	2,701	--	1,357	1,022
GRANVILLE	36,039	17,035	--	10,826	8,178	9,998	4,842	105	2,552	2,499
GUILFORD	26,656	3,849	--	10,217	12,590	6,458	891	--	2,373	3,194
IREDELL	28,210	8,241	--	6,709	13,260	7,516	2,614	200	1,717	2,985
LINCOLN	13,341	637	--	6,335	6,369	4,603	1,167	--	1,600	1,836
MECKLENBURG	15,225	6,802	--	4,616	3,807	4,708	2,054	96	1,462	1,096
MONTGOMERY	26,520	19,453	--	795	6,272	8,129	5,645	--	496	1,988
ORANGE	37,691	22,476	--	6,561	8,654	11,111	5,713	117	3,112	2,169
PERSON	32,149	9,093	--	7,248	15,808	10,267	3,551	251	2,208	4,257
POLK	3,069	1,119	--	--	1,950	1,436	624	--	--	812
RANDOLPH	44,292	19,524	697	3,345	20,726	13,398	5,588	254	1,348	6,208
ROCKINGHAM	11,302	1,810	--	4,911	4,581	4,623	1,300	--	1,866	1,457
ROWAN	10,862	7,161	--	--	3,701	2,989	1,867	--	--	1,122
RUTHERFORD	23,082	9,947	--	2,246	10,889	9,250	5,174	--	608	3,468
STANLY	9,813	7,151	--	--	2,662	2,726	1,822	--	159	745
STOKES	14,556	4,458	--	7,211	2,887	5,439	968	--	2,086	2,385
SURRY	13,656	4,239	--	2,395	7,022	5,020	1,841	--	801	2,378
UNION	18,331	10,775	--	2,025	5,531	9,246	4,526	--	1,344	3,376
VANCE	8,390	6,334	--	2,056	--	3,051	2,366	--	538	147
WAKE	73,057	43,734	--	18,067	11,256	19,738	10,669	--	4,555	4,514
WARREN	30,879	18,409	--	795	11,675	10,436	5,346	--	810	4,280
YADKIN	29,389	24,124	--	657	4,608	7,305	5,787	--	463	1,055
TOTAL	814,212	411,058	2,393	158,435	242,326	251,408	125,325	2,855	49,110	74,118

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1975*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
	ACRES					
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	4,944	--	--	--	4,944	--
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	711,486	3,574	10,564	56,508	339,265	301,575
SHORTLEAF PINE	695,610	3,573	5,957	7,506	340,172	338,402
VIRGINIA PINE	660,563	--	17,384	27,921	355,697	259,561
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	18,084	--	--	--	4,813	13,271
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	5,155	--	--	--	--	5,155
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	2,095,842	7,147	33,905	91,935	1,044,891	917,964
HARDWOOD TYPES:						
OAK-PINE	827,383	7,146	19,951	42,741	453,313	304,232
OAK-HICKORY	2,654,050	27,190	11,150	58,366	1,465,457	1,091,887
CHESTNUT OAK	34,571	3,573	--	--	5,216	25,782
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	170,531	--	15,232	--	117,612	37,687
ELM-ASH-COTTONWOOD	245,616	--	17,933	4,242	116,616	106,825
MAPLE-BEECH-BIRCH	--	--	--	--	--	--
TOTAL	3,932,151	37,909	64,266	105,349	2,158,214	1,566,413
ALL TYPES	6,027,993	45,056	98,171	197,284	3,203,105	2,484,377

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1975*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
NATIONAL FOREST	45,056	--	11,679	17,867	15,510	--
OTHER PUBLIC	98,171	6,559	33,257	40,641	17,714	--
FOREST INDUSTRY	197,284	5,226	80,728	95,194	16,136	--
FARMER	3,203,105	67,848	1,046,090	1,606,607	450,355	32,205
MISC. PRIVATE	2,484,377	79,122	754,178	1,297,624	323,142	30,311
ALL OWNERSHIPS	6,027,993	158,755	1,925,932	3,057,933	822,857	62,516

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1975*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	4,174,784	1,768,701	26,400	929,270	1,450,413
UPPER-STEM PORTION	585,563	214,148	3,196	143,790	224,429
TOTAL	4,760,347	1,982,849	29,596	1,073,060	1,674,842
POLETIMBER TREES	3,094,293	1,326,807	38,106	758,522	970,858
ALL GROWING-STOCK TREES	7,854,640	3,309,656	67,702	1,831,582	2,645,700
ROUGH TREES:					
SAWTIMBER-SIZE TREES	188,282	10,538	3,039	76,232	98,473
POLETIMBER-SIZE TREES	393,684	20,824	2,057	149,944	220,859
TOTAL	581,966	31,362	5,096	226,176	319,332
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	70,955	953	2,165	26,050	41,787
POLETIMBER-SIZE TREES	18,676	151	181	11,054	7,290
TOTAL	89,631	1,104	2,346	37,104	49,077
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	8,819	6,486	206	782	1,345
POLETIMBER-SIZE TREES	15,009	13,141	278	526	1,064
TOTAL	23,828	19,627	484	1,308	2,409
TOTAL, ALL TIMBER	8,550,065	3,361,749	75,628	2,096,170	3,016,518

TABLE 13.--*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1975*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	297	77	44	28	90	35	14	--	9	--	--
SLASH PINE	107	107	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	168,037	73,172	49,211	28,315	11,181	4,192	1,353	441	109	63	--
LOBLOLLY PINE	129,745	54,473	34,102	19,966	11,037	5,589	2,693	1,084	486	298	17
POND PINE	198	--	--	72	--	126	--	--	--	--	--
VIRGINIA PINE	120,026	61,207	34,649	16,112	5,636	1,808	449	137	28	--	--
PITCH PINE	1,894	341	572	501	337	79	39	19	--	6	--
TABLE-MOUNTAIN PINE	979	617	120	162	65	15	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	2,001	1,262	298	165	98	18	58	85	8	9	--
EASTERN HEMLOCK	146	--	41	71	--	14	--	9	7	4	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	11,730	7,755	2,475	1,058	360	72	--	10	--	--	--
TOTAL SOFTWOODS	435,160	199,011	121,512	66,450	28,804	11,948	4,606	1,785	647	380	17
HARDWOOD:											
SELECT WHITE OAKS	61,350	22,875	12,566	10,302	6,530	3,968	2,615	1,178	616	629	71
SELECT RED OAKS	10,687	3,449	2,297	2,272	947	638	427	314	146	183	14
CHESTNUT OAK	16,382	6,086	3,790	3,006	1,453	1,102	555	211	76	95	8
OTHER WHITE OAKS	18,248	6,992	4,051	3,462	1,791	1,151	372	275	54	96	4
OTHER RED OAKS	65,537	24,628	15,176	10,117	6,975	3,854	2,243	1,264	565	654	61
HICKORY	34,131	13,077	7,744	4,938	3,357	2,547	1,315	708	227	212	6
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	406	177	--	92	95	32	--	--	--	10	--
SOFT MAPLE	29,656	13,074	6,867	4,194	2,621	1,558	560	417	161	200	4
BEECH	4,809	1,734	706	636	474	465	318	237	41	194	4
SWEETGUM	54,393	24,272	13,869	7,626	4,291	1,924	1,324	565	268	239	15
TUPELO AND BLACKGUM	10,513	4,488	3,194	1,337	869	303	158	65	50	49	--
ASH	8,297	3,364	2,086	1,230	659	392	289	149	72	53	3
COTTONWOOD	18	--	--	--	--	18	--	--	--	--	--
BASSWOOD	10	--	--	--	--	--	--	--	--	10	--
YELLOW-POPLAR	62,047	22,136	13,182	9,631	6,954	4,746	2,515	1,476	728	656	23
BAY AND MAGNOLIA	163	113	50	--	--	--	--	--	--	--	--
BLACK CHERRY	2,435	1,555	614	215	--	18	--	33	--	--	--
BLACK WALNUT	1,382	557	255	351	101	52	36	22	8	--	--
SYCAMORE	2,998	725	887	330	454	174	135	76	75	125	17
BLACK LOCUST	1,697	338	398	441	240	169	46	49	8	5	3
ELM	10,320	4,355	3,188	1,230	869	341	217	54	19	47	--
OTHER EASTERN HARDWOODS	9,761	4,310	2,272	1,016	726	547	385	249	141	107	8
TOTAL HARDWOODS	405,240	158,305	93,192	62,426	39,406	23,999	13,510	7,342	3,255	3,564	241
ALL SPECIES	840,400	357,316	214,704	128,876	68,210	35,947	18,116	9,127	3,902	3,944	258

TABLE 14.--*VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1975*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
					THOUSAND CUBIC FEET						
SOFTWOOD:											
LONGLEAF PINE	4,167	207	309	326	1,612	851	459	--	403	--	--
SLASH PINE	286	286	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	1,281,654	199,746	321,683	340,110	213,865	117,351	53,011	23,493	7,341	5,054	--
LOBLOLLY PINE	1,226,047	152,723	228,858	238,703	211,798	155,942	105,797	59,383	36,634	32,524	3,685
POND PINE	4,439	--	--	812	--	3,627	--	--	--	--	--
VIRGINIA PINE	801,014	195,015	241,928	190,395	103,873	45,898	16,112	5,776	1,632	385	--
PITCH PINE	18,998	1,070	3,258	4,670	5,155	2,121	1,060	1,164	--	500	--
TABLE-MOUNTAIN PINE	5,517	1,895	804	1,427	1,130	261	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	15,573	3,205	1,892	1,810	1,622	444	1,729	3,780	508	583	--
EASTERN HEMLOCK	2,486	--	266	572	--	331	--	409	492	416	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	57,085	20,576	14,405	11,564	5,935	1,704	512	431	--	554	1,404
TOTAL SOFTWOODS	3,417,266	574,723	813,403	790,389	544,990	328,530	178,680	94,436	47,010	40,016	5,089
HARDWOOD:											
SELECT WHITE OAKS	780,818	68,953	80,948	123,810	123,905	105,793	98,895	58,405	41,345	64,250	14,514
SELECT RED OAKS	160,972	14,060	17,843	27,983	18,781	18,036	15,905	16,394	9,883	17,832	4,255
CHESTNUT OAK	190,909	18,246	25,829	36,282	28,286	32,101	21,220	12,425	4,813	10,388	1,319
OTHER WHITE OAKS	193,281	21,933	25,973	39,131	33,656	29,551	15,739	13,382	3,730	9,579	607
OTHER RED OAKS	757,180	74,567	95,957	113,993	125,960	98,189	81,758	59,510	34,344	61,366	11,536
HICKORY	422,667	37,963	54,762	62,103	64,211	70,997	52,434	39,024	15,414	23,340	2,419
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	6,158	949	264	1,153	1,616	1,009	--	--	--	1,167	--
SOFT MAPLE	406,010	67,191	69,033	70,144	61,444	49,229	28,767	23,518	13,208	22,308	1,168
BEECH	104,376	6,415	5,602	10,960	16,138	13,540	13,054	12,392	4,880	20,819	576
SWEETGUM	538,088	71,732	95,289	96,680	88,738	54,865	54,118	30,221	18,465	25,358	2,622
TUPELO AND BLACKGUM	106,077	17,879	24,795	22,098	16,914	8,320	5,176	3,417	3,249	4,229	--
ASH	113,756	16,617	20,376	17,019	15,115	13,586	12,450	8,162	4,189	5,756	486
COTTONWOOD	316	--	--	--	--	316	--	--	--	--	--
BASSWOOD	1,464	--	--	--	--	--	--	424	--	1,040	--
YELLOW-POPLAR	828,907	73,574	89,643	117,305	137,900	131,286	94,512	73,621	47,604	60,146	3,316
BAY AND MAGNOLIA	1,050	747	303	--	--	--	--	--	--	--	--
BLACK CHERRY	24,983	9,970	6,046	4,626	1,324	816	496	1,705	--	--	--
BLACK WALNUT	14,148	1,955	1,592	3,456	2,197	1,711	1,466	1,105	490	176	--
SYCAMORE	59,792	5,165	6,459	4,527	11,463	5,862	5,039	4,019	4,100	10,776	2,382
BLACK LOCUST	29,299	1,662	3,465	6,689	5,965	4,968	2,151	2,333	900	412	754
ELM	102,810	14,990	23,931	17,028	19,659	9,576	8,146	3,588	1,606	4,286	--
OTHER EASTERN HARDWOODS	265,910	84,849	52,286	33,727	24,819	20,075	15,439	11,945	8,991	12,772	1,007
TOTAL HARDWOODS	5,108,971	609,417	700,396	808,714	798,091	669,826	526,765	375,590	217,211	356,000	46,961
ALL SPECIES	8,526,237	1,184,140	1,513,799	1,599,103	1,343,081	998,356	705,445	470,026	264,221	396,016	52,050

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1975*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	4,167	207	309	326	1,612	851	459	--	403	--	--
SLASH PINE	286	286	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	1,271,735	196,533	319,010	337,724	212,902	116,667	53,011	23,493	7,341	5,054	--
LOBLOLLY PINE	1,219,680	150,742	226,567	237,754	211,448	155,587	105,797	59,383	36,193	32,524	3,685
POND PINE	4,148	--	--	812	--	3,336	--	--	--	--	--
VIRGINIA PINE	785,283	188,391	237,893	188,539	102,495	44,838	15,719	5,776	1,632	--	--
PITCH PINE	18,840	912	3,258	4,670	5,155	2,121	1,060	1,164	--	500	--
TABLE-MOUNTAIN PINE	5,517	1,895	804	1,427	1,130	261	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	15,306	3,205	1,625	1,810	1,622	444	1,729	3,780	508	583	--
EASTERN HEMLOCK	2,486	--	266	572	--	331	--	409	492	416	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	49,910	18,959	14,051	9,782	5,190	1,497	--	431	--	--	--
TOTAL SOFTWOODS	3,377,358	561,130	803,783	783,416	541,554	325,933	177,775	94,436	46,569	39,077	3,685
HARDWOOD:											
SELECT WHITE OAKS	740,207	63,235	75,968	117,843	119,095	103,556	95,694	56,196	38,625	56,491	13,504
SELECT RED OAKS	150,283	11,004	15,471	27,707	17,722	16,710	15,755	16,098	9,883	17,276	2,657
CHESTNUT OAK	159,607	14,867	21,703	31,664	23,556	27,965	18,071	9,590	4,047	7,080	1,064
OTHER WHITE OAKS	171,394	18,875	23,393	35,181	29,919	28,051	12,793	12,391	2,765	7,419	607
OTHER RED OAKS	721,420	68,879	89,993	109,504	120,415	96,021	78,453	57,902	33,333	56,698	10,222
HICKORY	396,028	34,963	49,484	57,439	61,660	69,056	50,928	35,369	14,274	20,436	2,419
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	5,526	581	--	1,153	1,616	1,009	--	--	--	1,167	--
SOFT MAPLE	276,241	40,303	43,114	47,256	45,608	38,712	18,359	17,661	9,011	15,773	444
BEECH	86,094	5,713	4,929	8,708	9,227	12,420	11,976	11,653	2,384	18,508	576
SWEETGUM	500,233	60,089	85,747	91,945	84,318	54,319	52,171	29,626	17,205	22,590	2,223
TUPELO AND BLACKGUM	81,860	11,679	19,080	14,548	14,692	7,702	5,176	2,639	2,772	3,572	--
ASH	87,270	9,957	13,007	12,283	12,767	11,382	11,585	7,261	4,189	4,353	486
COTTONWOOD	316	--	--	--	--	316	--	--	--	--	--
BASSWOOD	1,040	--	--	--	--	--	--	--	--	1,040	--
YELLOW-POPLAR	807,843	70,277	87,081	113,914	132,679	129,871	94,023	72,309	46,181	58,612	2,896
BAY AND MAGNOLIA	509	206	303	--	--	--	--	--	--	--	--
BLACK CHERRY	13,267	5,148	3,986	2,119	--	309	--	1,705	--	--	--
BLACK WALNUT	12,810	1,597	1,592	3,456	1,867	1,472	1,231	1,105	490	--	--
SYCAMORE	52,379	2,780	6,180	4,138	9,001	4,707	4,806	3,749	4,100	10,536	2,382
BLACK LOCUST	21,521	1,023	2,436	4,524	4,361	3,898	1,585	2,333	462	412	487
ELM	84,038	10,804	18,880	14,106	15,857	8,598	7,630	2,774	1,317	4,072	--
OTHER EASTERN HARDWOODS	107,396	10,481	14,532	12,552	12,888	14,149	12,863	11,486	8,095	9,343	1,007
TOTAL HARDWOODS	4,477,282	442,461	576,879	710,040	717,248	630,223	493,099	351,847	199,133	315,378	40,974
ALL SPECIES	7,854,640	1,003,591	1,380,662	1,493,456	1,258,802	956,156	670,874	446,283	245,702	354,455	44,659

TABLE 16.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1975*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	18,865	1,441	7,782	4,514	2,603	--	2,525	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	3,229,823	1,209,606	938,884	581,054	288,363	135,799	44,384	31,733	--
LOBLOLLY PINE	3,923,813	830,375	924,721	777,372	580,404	347,829	223,247	213,563	26,302
POND PINE	19,482	2,858	--	16,624	--	--	--	--	--
VIRGINIA PINE	1,370,272	638,665	414,666	201,754	76,753	29,631	8,803	--	--
PITCH PINE	63,691	15,282	21,497	10,819	5,741	7,026	--	3,326	--
TABLE-MOUNTAIN PINE	11,855	5,079	5,379	1,397	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	51,847	6,648	6,937	2,127	8,870	20,892	2,949	3,424	--
EASTERN HEMLOCK	11,193	1,837	--	1,617	--	2,257	2,838	2,644	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	74,808	39,994	24,499	7,784	--	2,531	--	--	--
TOTAL SOFTWOODS	8,775,649	2,751,785	2,344,365	1,605,062	962,734	545,965	284,746	254,690	26,302
HARDWOOD:									
SELECT WHITE OAKS	2,029,686	--	386,613	397,503	411,514	262,152	191,349	300,245	80,310
SELECT RED OAKS	395,423	--	56,930	61,332	63,521	69,949	45,122	84,382	14,187
CHESTNUT OAK	356,864	--	74,146	104,848	74,083	42,885	19,173	35,828	5,901
OTHER WHITE OAKS	701,162	--	200,088	204,718	100,230	101,415	23,307	65,717	5,687
OTHER RED OAKS	1,941,949	--	397,309	376,598	344,787	277,259	168,275	314,104	63,617
HICKORY	1,094,931	--	208,327	278,688	230,487	172,653	74,378	114,716	15,682
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	15,924	--	5,930	4,086	--	--	--	5,908	--
SOFT MAPLE	556,386	--	140,701	141,092	74,381	77,322	41,758	78,735	2,397
BEECH	228,205	--	28,969	40,670	40,463	40,416	8,434	67,100	2,153
SWEETGUM	1,177,435	--	295,780	230,186	249,421	155,094	95,576	136,560	14,818
TUPELO AND BLACKGUM	141,009	--	45,120	28,185	22,294	11,979	13,739	19,692	--
ASH	214,777	--	40,434	44,167	49,772	33,436	20,652	23,372	2,944
COTTONWOOD	1,348	--	--	1,348	--	--	--	--	--
BASSWOOD	5,459	--	--	--	--	--	--	5,459	--
YELLOW-POPLAR	2,448,611	--	461,403	545,444	444,597	373,464	254,067	350,602	19,034
BAY AND MAGNOLIA	--	--	--	--	--	--	--	--	--
BLACK CHERRY	9,098	--	--	1,221	--	7,877	--	--	--
BLACK WALNUT	22,124	--	6,618	5,269	4,437	4,012	1,788	--	--
SYCAMORE	178,001	--	28,875	17,785	21,009	17,724	20,628	57,656	14,324
BLACK LOCUST	49,608	--	15,360	14,163	5,878	8,840	1,780	1,623	1,964
ELM	158,416	--	53,654	32,807	32,224	12,758	6,272	20,701	--
OTHER EASTERN HARDWOODS	284,314	--	43,978	53,385	52,538	49,354	36,043	44,062	4,954
TOTAL HARDWOODS	12,010,730	--	2,490,235	2,583,495	2,221,636	1,718,589	1,022,341	1,726,462	247,972
ALL SPECIES	20,786,379	2,751,785	4,834,600	4,188,557	3,184,370	2,264,554	1,307,087	1,981,152	274,274

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1974*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	196,545	125,325
EASTERN WHITE PINE	2,281	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	3,147	2,855
TOTAL SOFTWOODS	201,973	128,180
HARDWOOD:		
SELECT WHITE AND RED OAKS	42,464	30,291
OTHER WHITE AND RED OAKS	50,104	30,475
HICKORY	13,676	7,629
YELLOW BIRCH	--	--
HARD MAPLE	1,907	--
SWEETGUM	23,617	12,606
ASH,WALNUT, AND BLACK CHERRY	5,699	2,015
YELLOW-POPLAR	55,291	24,139
TUPELO AND BLACKGUM	1,844	1,537
BAY AND MAGNOLIA	16	--
OTHER EASTERN HARDWOODS	26,240	14,536
TOTAL HARDWOODS	220,858	123,228
ALL SPECIES	422,831	251,408

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1974*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	649,824	411,058
EASTERN WHITE PINE	2,740	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	5,310	2,393
TOTAL SOFTWOODS	657,874	413,451
HARDWOOD:		
SELECT WHITE AND RED OAKS	151,034	99,185
OTHER WHITE AND RED OAKS	174,236	103,524
HICKORY	45,657	24,772
YELLOW BIRCH	--	--
HARD MAPLE	1,167	--
SWEETGUM	61,582	29,511
ASH,WALNUT, AND BLACK CHERRY	14,195	4,192
YELLOW-POPLAR	216,888	96,873
TUPELO AND BLACKGUM	4,606	1,918
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	75,295	40,786
TOTAL HARDWOODS	744,660	400,761
ALL SPECIES	1,402,534	814,212

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1974*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	29,558	40,457
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	728	1,529
TOTAL SOFTWOODS	30,286	41,986
HARDWOOD:		
SELECT WHITE AND RED OAKS	1,460	5,088
OTHER WHITE AND RED OAKS	4,763	12,260
HICKORY	1,286	4,047
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	774	1,926
ASH,WALNUT, AND BLACK CHERRY	1,104	2,585
YELLOW-POPLAR	1,787	7,353
TUPELO AND BLACKGUM	142	--
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	4,176	9,249
TOTAL HARDWOODS	15,492	42,508
ALL SPECIES	45,778	84,494

TABLE 20. --*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	86,085	28,164	605	8,778	48,538	78,867	28,164	605	7,856	42,242
OTHER PUBLIC	181,185	86,250	1,762	57,076	36,097	164,294	85,226	1,479	48,464	29,125
FOREST INDUSTRY	303,991	145,263	1,805	46,688	110,235	285,631	144,279	1,805	40,717	98,830
FARMER	4,599,352	1,755,223	44,349	1,227,388	1,572,392	4,229,332	1,739,816	39,854	1,071,476	1,378,186
MISCELLANEOUS PRIVATE	3,355,624	1,327,222	26,623	754,932	1,246,847	3,096,516	1,312,171	23,959	663,069	1,097,317
ALL OWNERSHIPS	8,526,237	3,342,122	75,144	2,094,862	3,014,109	7,854,640	3,309,656	67,702	1,831,582	2,645,700

TABLE 21. --*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	147,944	69,118	1,623	12,572	64,631	104,494	55,439	--	4,280	44,775
OTHER PUBLIC	269,521	178,410	3,118	44,987	43,006	169,493	66,884	--	61,129	41,480
FOREST INDUSTRY	443,118	278,418	4,776	40,014	119,910	270,781	92,293	--	48,294	130,194
FARMER	6,313,494	3,542,737	50,051	1,208,564	1,512,142	4,952,776	963,102	32,744	1,566,520	2,390,410
MISCELLANEOUS PRIVATE	4,600,865	2,541,086	31,875	730,883	1,297,021	3,513,893	850,314	13,661	994,538	1,655,380
ALL OWNERSHIPS	11,774,942	6,609,769	91,443	2,037,020	3,036,710	9,011,437	2,028,032	46,405	2,674,761	4,262,239

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	3,145	945	12	377	1,811	375	--	--	182	193
OTHER PUBLIC	8,772	4,971	39	2,089	1,673	12,994	7,551	82	2,560	2,801
FOREST INDUSTRY	16,162	9,509	88	2,048	4,517	13,641	5,989	251	1,774	5,627
FARMER	230,620	104,730	3,542	60,258	62,090	125,038	62,380	983	24,261	37,414
MISCELLANEOUS PRIVATE	164,132	76,390	1,747	35,987	50,008	99,360	49,405	1,539	20,333	28,083
ALL OWNERSHIPS	422,831	196,545	5,428	100,759	120,099	251,408	125,325	2,855	49,110	74,118

TABLE 23.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1974*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	15,159	4,583	21	1,510	9,045	789	--	--	--	789
OTHER PUBLIC	33,857	21,801	70	7,763	4,223	45,526	28,958	--	8,113	8,455
FOREST INDUSTRY	49,438	26,318	331	5,630	17,159	45,307	20,925	--	4,813	19,569
FARMER	756,272	340,482	4,755	196,314	214,721	403,750	200,631	1,696	78,313	123,110
MISCELLANEOUS PRIVATE	547,808	256,640	2,873	120,185	168,110	318,840	160,544	697	67,196	90,403
ALL OWNERSHIPS	1,402,534	649,824	8,050	331,402	413,258	814,212	411,058	2,393	158,435	242,326

TABLE 24.--AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1975

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	2,984	1,205	6,654	1,455	4,478	1,684	1,916	980	3,164	1,277	2,783	1,122
HARDWOOD	374	176	1,943	541	433	185	250	146	425	194	310	154
TOTAL	3,358	1,381	8,597	1,996	4,911	1,869	2,166	1,126	3,589	1,471	3,093	1,276
OTHER TIMBER:												
SOFTWOOD	--	13	--	--	--	27	--	8	--	10	--	15
HARDWOOD	--	33	--	76	--	76	--	14	--	39	--	26
TOTAL	--	46	--	76	--	103	--	22	--	49	--	41
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,670	588	5,970	1,293	1,896	501	2,426	652	1,551	560	1,566	604
HARDWOOD	1,531	657	2,304	985	2,480	800	1,313	656	1,618	666	1,341	622
TOTAL	3,201	1,245	8,274	2,278	4,376	1,301	3,739	1,308	3,169	1,226	2,907	1,226
OTHER TIMBER:												
SOFTWOOD	--	6	--	--	--	7	--	--	--	7	--	5
HARDWOOD	--	88	--	28	--	162	--	77	--	85	--	91
TOTAL	--	94	--	28	--	169	--	77	--	92	--	96
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	376	126	199	77	411	125	776	205	349	123	389	125
HARDWOOD	3,061	1,118	2,233	925	2,265	1,001	2,517	972	3,088	1,121	3,101	1,131
TOTAL	3,437	1,244	2,432	1,002	2,676	1,126	3,293	1,177	3,437	1,244	3,490	1,256
OTHER TIMBER:												
SOFTWOOD	--	3	--	--	--	--	--	2	--	4	--	2
HARDWOOD	--	143	--	161	--	148	--	133	--	145	--	141
TOTAL	--	146	--	161	--	148	--	135	--	149	--	143
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	346	79	--	--	313	74	--	--	415	98	255	52
HARDWOOD	4,129	1,335	--	--	2,800	1,256	8,877	2,662	4,287	1,335	4,014	1,308
TOTAL	4,475	1,414	--	--	3,113	1,330	8,877	2,662	4,702	1,433	4,269	1,360
OTHER TIMBER:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	1
HARDWOOD	--	251	--	--	--	218	--	281	--	258	--	246
TOTAL	--	251	--	--	--	218	--	281	--	258	--	247
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	1,456	560	2,196	501	2,290	799	1,597	621	1,442	559	1,405	546
HARDWOOD	1,992	743	2,197	872	1,757	715	1,439	594	2,099	770	1,913	720
TOTAL	3,448	1,303	4,393	1,373	4,047	1,514	3,036	1,215	3,541	1,329	3,318	1,266
OTHER TIMBER:												
SOFTWOOD	--	7	--	--	--	12	--	4	--	6	--	7
HARDWOOD	--	105	--	126	--	144	--	74	--	110	--	99
TOTAL	--	112	--	126	--	156	--	78	--	116	--	106
ALL TIMBER	3,448	1,415	4,393	1,499	4,047	1,670	3,036	1,293	3,541	1,445	3,318	1,372

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1956, 1964, AND 1975*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1964-1975
	1956	1964	1975	
	- - - - - - - - - *ACRES* - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	3,151,400	3,404,379	2,923,225	-481,154
HARDWOOD TYPES	2,669,700	2,611,487	3,104,768	+493,281
TOTAL	5,821,100	6,015,866	6,027,993	+ 12,127
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	15,900	15,902	20,242	+ 4,340
UNPRODUCTIVE	4,500	--	--	--
TOTAL	20,400	15,902	20,242	+ 4,340
NONFOREST LAND:				
CROPLAND	3,485,200	2,800,295	2,187,494	-612,801
PASTURE AND RANGE	708,800	798,089	966,306	+168,217
OTHER	497,900	864,716	1,245,516	+380,800
TOTAL	4,691,900	4,463,100	4,399,316	- 63,784
ALL LAND[1]	10,533,400	10,494,868	10,447,551	- 47,317

[1] EXCLUDES ALL WATER AREAS.

TABLE 26.--*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
SAWTIMBER (IN THOUSAND BOARD FEET)											
SOFTWOOD	1956	6,608,339	--	--	2,173,549	1,860,790	1,049,173	654,441	393,351	205,962	271,073
	1964	6,415,269	--	--	2,079,489	1,820,669	1,182,586	637,925	382,644	168,991	142,965
	1975	8,775,649	--	--	2,751,785	2,344,365	1,605,062	962,734	545,965	284,746	280,992
HARDWOOD	1956	7,959,941	--	--	--	1,701,971	1,775,195	1,325,822	966,827	853,404	1,336,722
	1964	8,656,097	--	--	--	1,885,602	1,922,230	1,505,706	1,119,183	762,630	1,460,746
	1975	12,010,730	--	--	--	2,490,235	2,583,495	2,221,636	1,718,589	1,022,341	1,974,434
GROWING STOCK (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1956	2,780,662	531,254	723,980	618,716	429,843	213,030	120,857	68,042	33,687	41,253
	1964	2,614,378	486,901	641,448	591,941	420,575	240,119	117,807	66,190	27,640	21,757
	1975	3,377,358	561,130	803,783	783,416	541,554	325,933	177,775	94,436	46,569	42,762
HARDWOOD	1956	3,190,916	314,469	490,093	563,349	490,199	433,080	294,300	197,958	166,226	241,242
	1964	3,401,346	371,714	472,483	569,557	543,088	468,951	334,230	229,153	148,545	263,625
	1975	4,477,282	442,461	576,879	710,040	717,248	630,223	493,099	351,847	199,133	356,352
ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1956	2,815,237	543,446	733,236	624,247	432,675	214,692	121,432	68,042	33,967	43,500
	1964	2,645,713	498,076	649,643	597,233	423,356	241,991	118,395	66,190	27,876	22,953
	1975	3,417,266	574,723	813,403	790,389	544,990	328,530	178,680	94,436	47,010	45,105
HARDWOOD	1956	3,655,947	433,780	594,899	641,714	545,345	460,402	314,414	211,306	181,309	272,778
	1964	3,899,538	512,743	573,517	648,792	604,179	498,539	357,058	244,649	161,996	298,065
	1975	5,108,971	609,417	700,396	808,714	798,091	669,826	526,765	375,590	217,211	402,961

[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Welch, Richard L.
1975. Forest statistics for the Piedmont of North Carolina, 1975. USDA For. Serv. Resour. Bull. SE-32, 33 p. Southeast. For. Exp. Stn., Asheville, N. C.

Since 1964, commercial forest land has shown little change in the 35-county area, but the total volume of growing stock has increased by 1.8 billion cubic feet. All major species in the region have increased in volume except shortleaf pine, which was down slightly. Volume of softwood growing stock increased by 29 percent, and volume of hardwood growing stock increased by 32 percent. In 1974, annual net growth of growing stock exceeded removals by 171 million cubic feet.

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Southeastern Forest Experiment Station
Asheville, North Carolina

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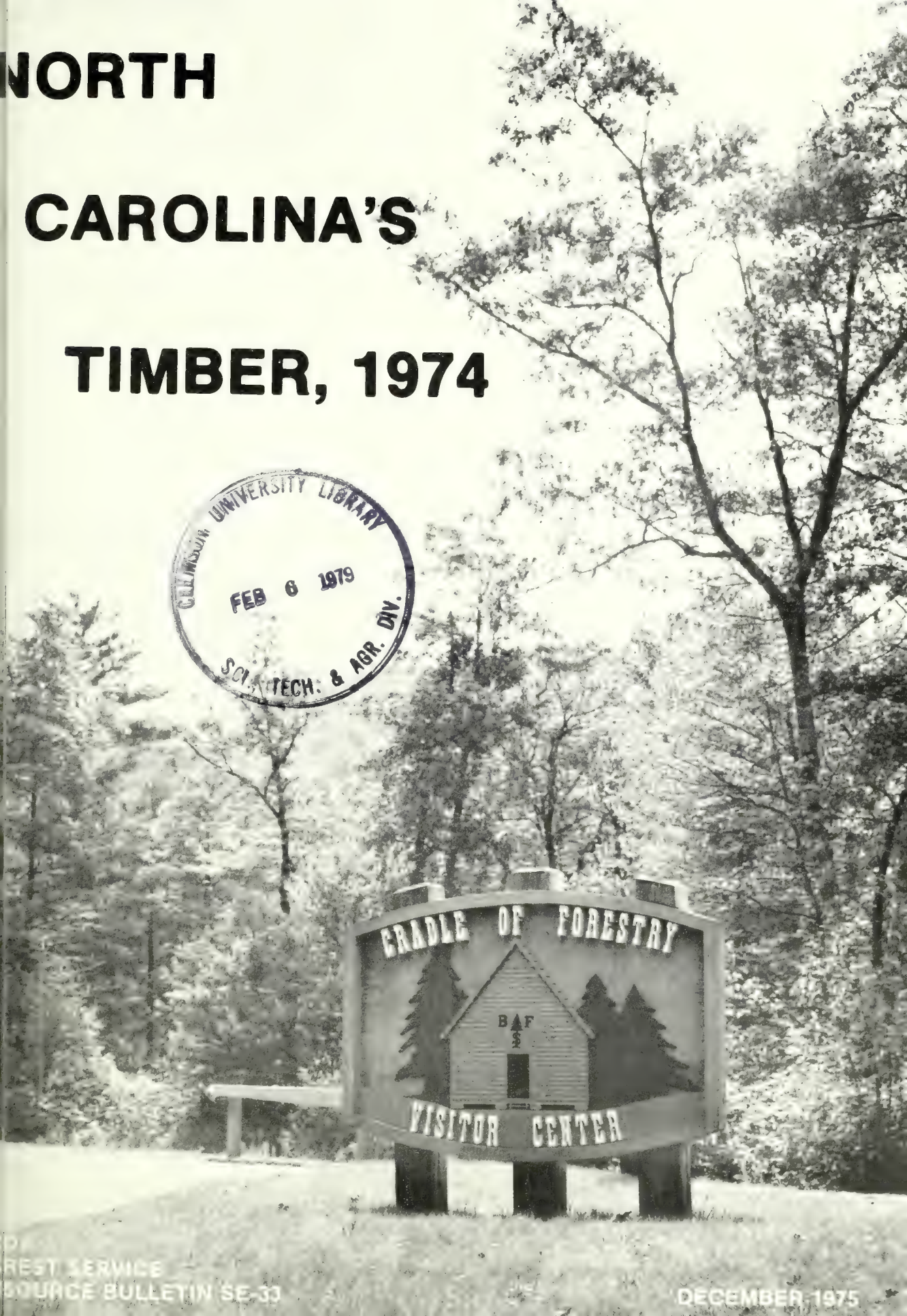
NORTH CAROLINA'S TIMBER, 1974



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REST SERVICE
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DECEMBER 1975

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Foreword

This report presents the principal findings of the fourth evaluation of North Carolina's forest resources. The field survey was started in November 1972 and completed in January 1975. Three previous surveys, completed in 1938, 1956, and 1964, provide statistics for measuring changes and trends over the past 36 years. In this report, the primary emphasis is on the changes and trends since 1964.

Additional breakdowns of some of the data, including many county tables, are available in four Survey Unit reports issued as the survey progressed through the State. Copies of these reports can be obtained from the Southeastern Forest Experiment Station. A Forest Information Retrieval service is also available at the Southeastern Station; Forest Survey statistics are compiled at cost for any geographic area within the Station territory.

Section 9 of the McSweeney-McNary Forest Research Act of 1928, as amended, and the Forest and Rangeland Renewable Resources Planning Act of 1974 authorize these forest resources evaluations. These evaluations are also guided by Forest Service enabling legislation such as the Multiple-Use Sustained Yield Act of 1960 and the National Environmental Policy Act of 1969. Forest resources evaluation in Florida, Georgia, North Carolina, South Carolina, and Virginia is a research activity of the Southeastern Forest Experiment Station, which is headquartered at Asheville, North Carolina. The primary objective of these evaluations is to develop and maintain a resource information base, and in cooperation with other research groups, to periodically appraise the levels of output from forest and range lands under alternative management strategies. This information will be used for the formulation of forest and rangeland policy and programs.

The combined efforts of many people have gone into this forest resources evaluation of North Carolina's timberlands. Appreciation is expressed to all Work Unit and Station personnel who participated in the field and office work. Special appreciation is also expressed for the excellent cooperation of the forest industries, other private landowners, and public agencies in providing information and access to the sample locations. The Southeastern Station also gratefully acknowledges the cooperation and assistance provided by the North Carolina Department of Natural and Economic Resources, the Weyerhaeuser Company, the Southern Region of the U. S. Forest Service, and the Tennessee Valley Authority.

Finally, the evaluation of many forest and rangeland values in North Carolina is beyond the scope of this report. The purpose of this publication is to evaluate the timber situation.

ROBERT G. McALPINE, Assistant Station Director for Continuing Research, Carolinas-Virginia

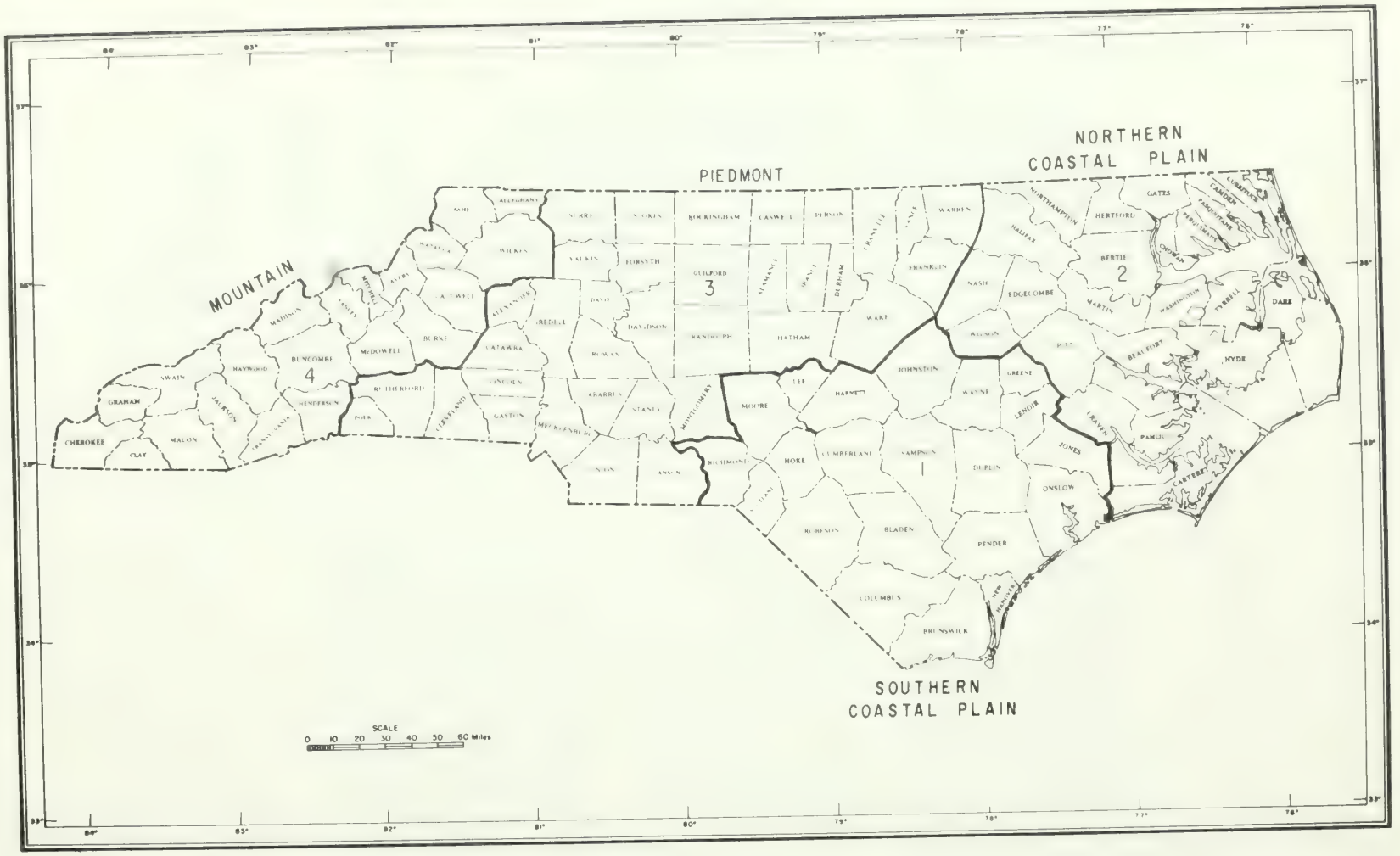


Figure 1. — Forest Survey Units in North Carolina.

NORTH CAROLINA'S TIMBER, 1974

by

HERBERT A. KNIGHT, Resource Analyst

and

JOE P. McCLURE, Principal Resource Analyst

HIGHLIGHTS

Since the third Forest Survey in North Carolina as completed in 1964—

—area of commercial forest land decreased from 0.0 to 19.5 million acres, or by more than 2 percent. ree planting and the natural reversion of idle gricultural lands to forest offset the diversion of nother 0.7 million acres of commercial forest to ther land uses. Renewed agricultural activity, ontinuing urban encroachment, and other forest ithdrawals will likely perpetuate this downward end in acreage available for commercial timber roduction.

—hardwoods replaced pines on more than 70,000 acres. Unless greater attention is given to ie prompt and adequate regeneration of pine ands following harvesting, the trend from pine to ardwood could gain momentum. As retirement nd reversion of cropland to pine diminish, forest creage supporting pine in North Carolina could ecline substantially, particularly on private, non-idustrial lands.

—almost 2.9 million acres of commercial forest ere harvested. This total does not include acreage f land-use change or intermediate cutting. Less ian 19 percent of the acreage harvested and re-ained in the commercial timber base was artificially egenerated. Another 36 percent restocked naturally the extent that a manageable stand was present. egeneration was lacking on the remaining 45 percent of the acreage harvested. These findings indicate that regeneration efforts failed to keep pace with the rate of harvesting.

—volume of growing-stock timber increased from 20.9 to 24.8 billion cubic feet, or by 19 percent. More than 80 percent of the net increase in timber volume occurred in the Piedmont and Mountain regions, reflecting windfall gains from timber stands that developed on extensive acreages of idle farmland. A 3-percent reduction in the volume of softwood growing stock in the Northern Coastal Plain was one highly significant exception to the overall buildup in inventory. This decrease was attributed to a sharp increase in softwood removals, which almost doubled in this region. Statewide, hardwoods accounted for almost two-thirds of the volume increase.

—rate of net annual growth increased by 21 percent to an average of 58 cubic feet per acre of commercial forest. Hardwoods accounted for two-thirds of the increase and, for the first time since statewide surveys were begun, hardwood growth exceeded that of softwood. By region, average growth per acre ranged from a high of 70 cubic feet in the Piedmont to a low of 46 cubic feet in the Southern Coastal Plain. Growth in the Piedmont was inflated by an unusually high rate of ingrowth and probably will not be sustained at the level indicated. For example, ingrowth accounted for 23 percent of the gross softwood growth in the Pied-

mont, in contrast to only 14 percent for the other three regions combined.

—annual growth loss to mortality was reduced from 16 to 11 percent. In 1973, mortality of growing stock totaled 140 million cubic feet and included 317 million board feet of sawtimber. Weather, suppression, and insects were the leading causes of mortality identified. Improved protection and successful control efforts have substantially reduced losses to wildfire. Protected area burned has been held below 100,000 acres annually for the past several years. More than 35 percent of the softwood mortality was attributed to insects, and recent outbreaks of pine bark beetle infestations have created a major forestry concern in North Carolina.

—timber removals for products or withdrawals from the commercial forest base averaged approximately 635,000 acres per year. In 1973, removals of growing stock totaled just over 750 million cubic feet and included 2,730 million board feet of sawtimber. About 77 percent of the cubic volume removed was converted into timber products, 9 percent was left in the woods in the form of logging residue, and the remaining 14 percent was lost in silvicultural operations, land clearing, and other withdrawals where the timber was not used. Closer utilization was evident both in the woods and at processing plants; however, an increase in other removals nullified most of the gains from improved utilization.

—about 840,000 acres were artificially seeded or planted. Some 64 percent of this reforestation was on acres which had also been harvested during the remeasurement period, and another 9 percent was on old fields. These figures suggest that about 27 percent of the tree planting effort was directed toward the backlog of needed regeneration.

—there was no significant treatment or disturbance on some 12.6 million acres, or 64 percent of the land classified as commercial forest in 1974. Almost 23 percent of the undisturbed stands were on sites unfavorable for intensive silvicultural practices either because of steep slopes or year-around water problems. Only 8 percent of the treated or disturbed stands occurred on similar sites.

—the margin of net annual growth over removals increased to 374 million cubic feet for total growing stock and included 1,238 million board feet of sawtimber. Hardwoods accounted for well over 70 percent of this surplus. Hardwood growth has already overtaken softwood growth in North Carolina, and if timber utilization follows the trend of prospective supply, hardwood cut should exceed softwood cut within the next 10 to 15 years. Forestry practices have enabled hardwoods to replace pine on sites better suited for pine from the standpoint of timber production. Unless greater control over species composition is exercised through prompt regeneration following harvesting, major adjustments in utilization seem inevitable.

Timber Trends

North Carolina encompasses more than 31.2 million acres of land and spans three well-defined physiographic regions: Coastal Plain, Piedmont, and Mountain. The Coastal Plain is a broad expanse of level land extending inland from the seacoast an average of 150 miles, with a gradual rise in elevation to about 500 feet along its western margin. Along the seacoast this region is poorly drained and much of its soil is highly organic. Swamps, bays, and pocosins dominate the landscape. Further inland, the Coastal Plain is better drained and the soils are primarily sandy loams, which are easily worked and highly productive when fertilized. Although it is rich in natural resources, the northern half of the Coastal Plain is one of the most sparsely populated sections of the State, with fewer than 700,000 inhabitants distributed over 6.7 million acres of land.

The Piedmont is a rolling to hilly plateau extending across the central part of the State, ranging in elevation from 500 to more than 1,000 feet at the base of the mountains. The soils are predominantly red clay loams somewhat depleted from a long history of agricultural use and serious erosion of topsoil. Cropland retirement, the establishment of pastureland, and urban development have recently altered the landscape of this area. Although this region embraces only a third of the land area, more than half of the State's inhabitants reside in the Piedmont.

The Mountain region in the western part of the State is a high plateau of valleys and basins surrounded and interlaced with some of the highest and most rugged mountains in the Eastern United States. Although the main floor of the plateau ranges from 2,000 to 3,000 feet in elevation, numerous mountain peaks exceed 6,000 feet in height. Soil types range from stiff clays to sandy and stony loams. Although sparsely populated compared to the Piedmont and Southern Coastal Plain, the region has a climate and esthetic attributes that attract large numbers of seasonal visitors.

This fourth evaluation of North Carolina's forest resources identified significant differences in recent trends in land use, ownership patterns, forest type, and timber production among the three regions. Also, because of important sectional differences, this analysis recognizes and retains the traditional division of the Coastal Plain into a southern and northern section (fig. 1).

COMMERCIAL FOREST ACREAGE DECREASING

Between 1964 and 1974, acreage classified as commercial forest in North Carolina decreased more than 2 percent from 20.0 to 19.5 million acres (table I). Tree planting and the natural reversion of idle agricultural land to forest offset the diversion of another 0.7 million acres of commercial forest to other land uses. Renewed agricultural activity, continuing urban encroachment, and other forest withdrawals will likely perpetuate this downward trend in commercial forest acreage.

About 95 percent of the net reduction in commercial forest land occurred in the Coastal Plain where large areas are being drained and cleared for agriculture. While these highly organic soils have been used for forestry and wildlife, their planned development will create some of the largest farms in the United States. In addition to the area diverted to agriculture, an even greater acreage of forest land within the Coastal Plain was lost to urban development and other land uses. In total, 540,100 acres of commercial forest were diverted while only 127,500 acres of new forest were added. From the standpoint of future timber production, the impact of this net loss could be rather small in that many of

Table 1. — Changes in area of commercial forest land, by Survey Unit, North Carolina, 1964-1974

Survey Unit	Area of commercial forest land in:		Net change	Changes							
				Total gain	Additions from:		Total loss	Diversions to:			
	1964	1974			Nonforest	Noncommercial forest		Noncommercial forest	Agriculture	Urban and other	Water
	Thousand acres										
Southern Coastal Plain	5,667.0	5,391.9	-275.1	91.7	91.7	–	366.8	3.5	155.2	193.0	15.1
Northern Coastal Plain	4,247.9	4,110.4	-137.5	35.8	35.8	–	173.3	1.1	98.9	68.2	5.1
Piedmont	6,015.9	6,028.0	+ 12.1	472.3	472.3	–	460.2	4.4	187.9	241.1	26.8
Mountains	4,045.1	4,014.5	- 30.6	92.1	92.1	–	122.7	54.3	35.9	32.5	–
State	19,975.9	19,544.8	-431.1	691.9	691.9	–	1,123.0	63.3	477.9	534.8	47.0

the acres involved were of marginal quality for timber growing.

The remaining net reduction in commercial forest acreage occurred in the Mountain region, where almost 80 percent of all land is forested. Urban concentrations are scattered and relatively small in this region and, because of its rugged terrain, only a small proportion of the land is suitable for intensive agriculture. Nonforest areas include substantial acreages of pastureland and orchards. In addition to timber, the mountain forests are extremely important as watersheds and for outdoor recreation, esthetic attraction, and fish and wildlife. More than 400,000 acres of forest have already been withdrawn from timber utilization through statute or administrative designation. Land-use change in the Mountain region, therefore, often centers around social and environmental issues between timber and nontimber uses of the forest, rather than around economic decisions between forest and nonforest uses. This latest evaluation indicated that 122,700 acres of commercial forest were diverted or withdrawn, while 92,100 acres were added. More than 40 percent of the loss is attributed to the reclassification of forest from commercial to noncommercial.

The area of commercial forest has also peaked in the Piedmont, where total acreage remained about the same between surveys. Extensive cropland retirement in this region, and its reversion to forest, accounts for most of the past expansion in North Carolina's forest acreage. During this latest remeasurement period, 460,200 acres of forest were diverted to other uses while 472,300 acres of new forest were added. Most of the diversion is attributed to urban encroachment and the establishment of new pastureland. With less than 300,000 acres classified as idle farmland, it is unlikely that the region's rapid rate of development can be continued without reductions in forest acreage.

DECLINE IN FARM WOODLAND SLOWS

The shift in forest ownership from farmers to other miscellaneous private owners continued but at a much slower rate. Between 1955 and 1964, the proportion of total commercial forest land classified as farmer-owned decreased from 69 to 47 percent. This proportion was 43 percent in 1974. By Survey Unit, the proportion of total commercial forest land owned by farmers ranges from a low of 29 percent in the Mountains, to a high of 53 percent in the Piedmont. Collectively, farm woodlands totaled more than 8.4 million acres and remain as the largest source of timber in North Carolina.

About 2.3 million acres of privately owned timberland in North Carolina were classified as either owned or under long-term lease by forest industry. Several major land transactions and associated plant closings reduced the acreage of timberland owned by forest industry. Acreage under long-term lease to industry was up, but was still relatively small in total. By Survey Unit, the proportion of total commercial forest land under control of forest industry ranges from a low of 3 percent in the Mountains to a high of 22 percent in the Northern Coastal Plain.

Commercial forest land owned by other miscellaneous private individuals and corporations totaled more than 7.0 million acres, and remains as the second leading source of timber. An upward trend in acreage in the miscellaneous private owner class continued. By Survey Unit, the proportion o

total commercial forest acreage in this owner class ranges from a low of 28 percent in the Southern Coastal Plain to a high of 44 percent in the Mountains.

Less than 1.8 million acres, or only 9 percent of North Carolina's commercial forest land, were classified as publicly owned. More than half of these publicly owned timberlands are on the Pisgah, Nantahala, Croatan, and Uwharrie National Forests. Other large public holdings include the Fort Bragg and Camp Lejeune military reservations; the Cherokee Indian Reservation; Bladen Lakes State Forest; Sandhill, Holly Shelter, Caswell, Gull Rock, and Angola Bay Game Lands; the Pungo Lake National Wildlife Refuge; and forests around New Hope Lake and the John H. Kerr Reservoir. By Survey Unit, the proportion of total commercial forest land that is publicly owned ranges from a low of 2 percent in the Piedmont to a high of 23 percent in the Mountains. In addition to the commercial timberland, some 430,000 acres of publicly owned forests are withdrawn from timber utilization through statute or administrative designation. Most of these lands are also in the Mountain Unit. Statewide, commercial forest additions just about offset the withdrawals within the public owner class.

Based on the forest ownership pattern described, forest industry is more heavily dependent on open-market sources of timber in North Carolina than in any of the five Southeastern States, with the possible exception of Virginia. With ownership of its private timberland divided among an estimated 245,000 individuals and corporations, North Carolina also has the greatest number of forest owners of any State in the Southeast. These factors, together with the physiographic differences described, take on special significance in the planning and implementation of forestry programs.

HARDWOODS ENCROACH ON PINE SITES

Changes in forest type indicate that hardwoods have replaced pines on more than 370,000 acres. The net changes in acreages of forest types underestimate the extent of hardwood encroachment. For example, the net reduction in acreage of commercial forest land occupied by pine and other softwood types was only about 237,000 acres. However, more than 80 percent of the forest additions were to the pine types, while less than 40 percent of the diversions of commercial forest land to other land uses were from pine types. If land-use change was the only factor affecting forest type, acreage dominated by pines would have increased by more than 133,000 acres. Thus man's actions or inactions, together with nature's successional change, enabled hardwoods to replace pines on at least 370,000 acres.

Unless greater attention is given to the prompt and adequate regeneration of pine stands following harvesting, the trend from pine to hardwood could gain momentum in North Carolina. As retirement and reversion of cropland to pine diminish, the likelihood of a substantial reduction in pine acreage increases, particularly on private, nonindustrial holdings. This trend is especially likely in the Piedmont region, where forest industry and public agencies together control only 6 percent of the timberland. Without more effective regeneration effort, the trend toward clearcutting and closer utilization could add to the problem of hardwood encroachment.

Up to now the loss in pine acreage has occurred mainly in the shortleaf pine, pond pine, and longleaf pine types. In the 1955 survey, these three types occupied almost 3.9 million acres of commercial forest land. By 1964, their combined acreage had declined to slightly less than 3.0 million acres, and it has now been reduced to 2.4 million acres. Acreage in loblolly pine, the State's most important forest type, has followed a somewhat different trend. After a decline from 3.5 to 3.1 million acres between 1955 and 1964, acreage of loblolly pine was back up to almost 3.3 million acres. Loblolly pine is the species most widely favored in pine management in North Carolina.

A comparison of the 1964 and 1974 acreages in the oak-pine type could lead to the conclusion that this type is shrinking rapidly, but this is not the case. The acreage in this transitional type in the succession from pine to hardwood, where pines comprise 25 to 50 percent of the stocking, was overestimated in the 1964 survey. Procedures were modified to correct this situation in the latest survey. For this reason, an increase in oak-pine acreage from 2.0 to 2.5 million acres between 1955 and 1974 is more indicative of the real change. This increase provides additional evidence that there has been significant hardwood encroachment onto sites which have previously supported pine.

REGENERATION LAGS BEHIND HARVESTING

Examination of the distribution of acres by stand size suggests that regeneration efforts have failed to keep pace with the rate of harvesting. For example, acreage of nonstocked forest has more than doubled and totals almost 0.5 million acres. A lag in regeneration is further evidenced by reductions in both the acreage of sawtimber and sapling-seedling stand sizes.

Stand histories at sample locations indicate that almost 2.9 million acres were harvested between the third and fourth surveys. Acres that experienced either land-use change or intermediate cutting are excluded. Less than 19 percent of the acreage harvested was artificially regenerated. Another 36 percent had restocked naturally to the extent that a manageable stand was present. Regeneration was lacking on the remaining 45 percent of the acreage harvested. Altogether, the backlog of forest needing regeneration in North Carolina was estimated to total 2.9 million acres exclusive of another 1.2 million acres where stand conversion should be considered because species composition is obviously unsatisfactory for timber production.

VOLUME ACCUMULATION ACCELERATES

In contrast to the decline in commercial forest acreage, volume of growing-stock timber increased from 20.9 to 24.8 billion cubic feet, or by 19 percent. When compared with the 7-percent increase which occurred between the second and third surveys, this indicates that there has been a sharp acceleration in the rate of inventory buildup. While part of this increase can certainly be attributed to improved forestry practices, better protection, and closer utilization, other significant factors should not be overlooked. For example, more than 80 percent of the net increase occurred in the Piedmont and Mountain regions; much of this change is windfall gain from timber stands that have developed on extensive acreages of idle farmland, particularly in the Piedmont. Many of these stands were in the sapling-seedling stage during the 1964 survey. The new volume and growth statistics reflect their development into merchantable size.

Statewide, hardwoods accounted for almost two-thirds of the volume increase. Oaks, maples, yellow-poplar, and beech registered the largest percentage gains in volume of all the major hardwood species. Smaller increases occurred in the volumes of sweetgum, hickory, and ash. Volume of blackgum and tupelo decreased. Of all the major softwood species, Virginia pine, pitch pine, white pine, and hemlock made the largest percentage gains; however, the volumes of loblolly pine, pond pine, longleaf pine, and cypress were also up. Shortleaf pine was the only softwood species with a volume loss.

The volume increases extended across the range of diameter classes for both softwoods and hardwoods, but at significantly different rates. Almost 40 percent of the softwood increase was concentrated in the 8- and 10-inch diameter classes (fig. 2). The sharp dropoff in volume beyond the 10-inch class reflects the short rotations used in pine management. Almost half of the hardwood increase was in trees 10 to 14 inches in diameter (fig. 3). The sharp dropoff in hardwood volume occurs beyond the 12-inch class.

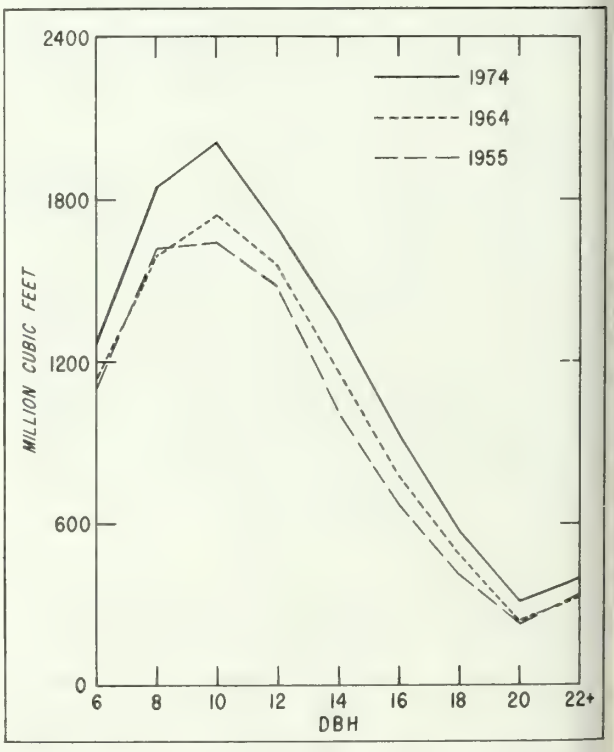


Figure 2. — Volume of softwood growing stock, by tree diameter, 1955, 1964, and 1974.

By ownership class, the largest inventories per acre are carried on National Forests, where cubic volume per acre was 13 percent above the Statewide average. Hardwood stands managed on long rota-

tions for large sawtimber predominate on this ownership class. The smallest inventories were found on forest industry lands where cubic volume per acre was 27 percent below the Statewide average. Pine stands managed on short rotations for pulpwood predominate on this ownership class. The fact that more than 45 percent of the stands owned or leased by forest industry were in the sapling-seedling stage further explains the low inventory volume.

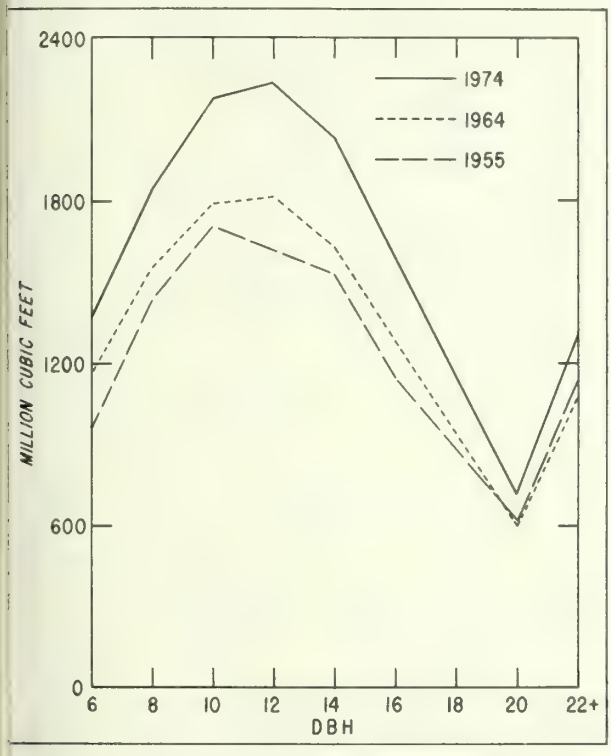


Figure 3. — Volume of hardwood growing stock, by tree diameter, 1955, 1964, and 1974.

A 3-percent reduction in the volume of softwood growing stock in the Northern Coastal Plain was one highly significant exception to the overall buildup in inventory. This softwood reduction occurred across most counties, several species, and most diameter classes in the region. Volume of loblolly pine, the region's most important timber species, was down almost 9 percent. Percentage volume reductions in cypress and shortleaf pine were even greater. This decrease was attributed to a sharp increase in softwood removals, which almost doubled in this region. Although the Northern Coastal Plain has a high proportion of the better sites and a timber growth potential well above the Statewide average, the findings suggest that a 20-percent increase in softwood growth must be achieved in the region before it can sustain the rate of timber removals determined in this latest survey.

The total volume of growing stock included 72,870 million board feet of sawtimber. Although acreage supporting sawtimber stands decreased from 10.5 to 8.2 million acres, inventory volume of sawtimber has followed a pattern of change similar to that described for total growing stock.

GROWTH RATE UP 21 PERCENT

In 1973, net growth of growing-stock timber averaged 58 cubic feet per acre of commercial forest land, or 21 percent above the average determined in the 1964 survey. Hardwoods accounted for two-thirds of the increase, and for the first time, hardwood growth exceeded that of softwood. Trends in growth and removals, by species, point toward a further buildup in inventory volume more heavily dominated by hardwoods (fig. 4).

By region, average growth per acre ranged from a high of 70 cubic feet in the Piedmont to a low of 46 cubic feet in the Southern Coastal Plain. Growth in the Piedmont was inflated by an unusually high rate of softwood ingrowth, and probably will not be sustained at the level indicated. For example, ingrowth accounted for 23 percent of the gross softwood growth in the Piedmont, in contrast to only 14 percent for the other three regions combined. This difference is attributed to the development of pine stands on extensive acreages of retired farmland in the Piedmont.

By ownership class, average growth per acre ranged from a high of 63 cubic feet on farm woodland to a low of 41 cubic feet on public lands outside National Forests. The high average on farmer-owned lands reflects the Piedmont situation described earlier, as well as the fact that this ownership class includes some of the best sites for tree growth. The low average for other public holdings is attributed to the large proportion of poor sites within the class. Growth per acre averaged only 46 cubic feet on lands owned and leased by forest industry; but this is understandable in light of the finding that more than 45 percent of the stands in this owner class were in the sapling-seedling stage of development. As these stands develop, a substantial increase in growth can be expected, particularly in the Coastal Plain, where most of the industry holdings are concentrated.

A detailed breakdown of gross growth into its various components, by Survey Unit and species

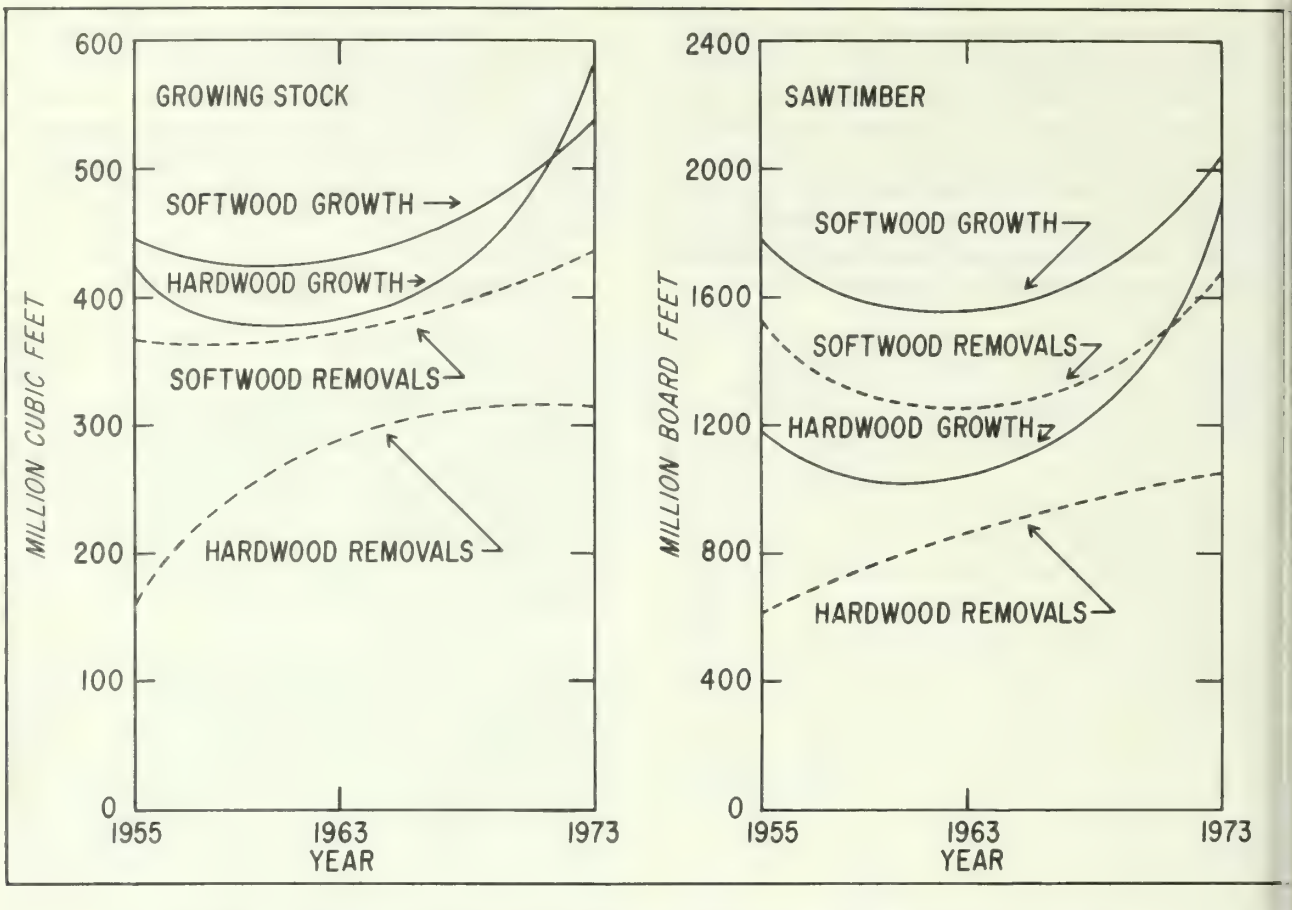


Figure 4. — Trends in net growth and timber removals in North Carolina since 1955.

Table II. — Annual components of change in the volume of growing stock on commercial forest land, by Survey Unit and by softwood and hardwood, North Carolina, 1973

Survey Unit and species group	Gross growth	Components of growth					Mortality	Net growth	Removals	Net change
		Survivor growth	Ingrowth	Growth on ingrowth	Growth on removals	Growth on mortality				
	Million cubic feet									
Southern Coastal Plain:										
Softwood	176.5	147.7	23.0	2.1	3.2	0.5	17.9	158.6	138.6	+ 20.0
Hardwood	100.7	83.9	15.0	0.8	0.8	0.2	13.0	87.7	53.8	+ 33.9
Total	277.2	231.6	38.0	2.9	4.0	0.7	30.9	246.3	192.4	+ 53.9
Northern Coastal Plain:										
Softwood	135.3	117.2	13.8	1.2	2.6	0.5	20.4	114.9	136.5	- 21.6
Hardwood	132.7	111.0	18.9	1.1	1.4	0.3	16.2	116.5	91.5	+ 25.0
Total	268.0	228.2	32.7	2.3	4.0	0.8	36.6	231.4	228.0	+ 3.4
Piedmont:										
Softwood	232.3	176.0	48.9	3.8	2.8	0.8	30.3	202.0	128.2	+ 73.8
Hardwood	236.3	199.0	31.8	2.6	2.6	0.3	15.5	220.8	123.2	+ 97.6
Total	468.6	375.0	80.7	6.4	5.4	1.1	45.8	422.8	251.4	+171.4
Mountains:										
Softwood	68.6	55.2	11.6	0.9	0.7	0.2	8.5	60.1	33.4	+ 26.7
Hardwood	182.5	158.6	21.4	1.3	0.8	0.4	18.7	163.8	45.4	+118.4
Total	251.1	213.8	33.0	2.2	1.5	0.6	27.2	223.9	78.8	+145.1
State:										
Softwood	612.7	496.1	97.3	8.0	9.3	2.0	77.1	535.6	436.7	+ 98.9
Hardwood	652.2	552.5	87.1	5.8	5.6	1.2	63.4	588.8	313.9	+274.9
Total	1,264.9	1,048.6	184.4	13.8	14.9	3.2	140.5	1,124.4	750.6	+373.8

group, along with the distribution of mortality and removals, identifies the recent sources of annual change in timber volume (table II). Survivor growth, the volume increment of growing-stock trees 5.0 inches d.b.h. and larger in the inventory at the beginning of the year and surviving to its end, accounted for 83 percent of the gross growth. Ingrowth, the net volume of growing-stock trees reaching 5.0 inches d.b.h. during the year, and the subsequent growth on these trees, accounted for another 16 percent. Growth on removals before removal and growth on mortality before death made up the remaining 1 percent.

In 1973, mortality of growing stock totaled more than 140 million cubic feet and reduced gross growth by 11 percent. Weather, suppression, and insects were the leading causes of death identified, followed in order by disease, fire, and animals. Attention is called to the heavy loss to insects, which accounted for more than 35 percent of the softwood mortality. This large loss is mainly attributed to pine bark beetles, which have created a major forestry concern in North Carolina. Improved protection and successful control efforts have substantially reduced losses to wildfire. Protected area burned has been held below 100,000 acres annually for the past 7 years (table III).

Table III. — Forest area under fire protection, protected area burned, number of fires, and average size of fires, North Carolina, 1964-1974[1]

Year	Forest area protected		Protected area burned		Fires	Average size of fires
	M acres	*Percent*	*M acres*	*Percent*	*Number*	*Acres*
1964	18,816	94.57	38	0.20	3,424	11
1965	18,862	94.76	67	0.35	4,746	14
1966	19,360	95.53	127	0.66	4,696	27
1967	19,362	95.54	101	0.52	5,550	18
1968	19,371	95.55	87	0.45	6,464	13
1969	19,393	95 55	68	0.35	4,262	16
1970	19,388	95.55	82	0.42	4,988	16
1971	21,974	96.05	99	0.45	3,697	27
1972	23,613	96.31	38	0.16	2,451	16
1973	22,382	97.50	31	0.14	3,499	9
1974[2]	20,867	97.93	35	0.17	3,223	11

[1] Source: U. S. Department of Agriculture, Forest Service, Forest Fire Statistics, 1964-1974.

[2] Figures are preliminary.

Timber Products Output

The volume of roundwood harvested from North Carolina's forests in 1973 totaled 620 million cubic feet. Plant byproducts pushed the volume of total product output up to 718 million cubic feet, which was 27 percent greater than the 1964 estimate. A canvass of the primary wood-using industries conducted by the North Carolina Department of Natural & Economic Resources showed that 410 mills operated in the State during 1973 (fig. 5). These mills received logs, bolts, and other forms of roundwood from which they manufactured lumber, veneer, plywood, chips, pulp, paper, and other products. In addition, an undetermined number of secondary manufacturing plants located in the State were engaged in the remanufacture of lumber, veneer, plywood, paper, and other products into finished goods such as furniture, fixtures, and containers. Altogether, the timber-based industries employed some 115,000 people and generated an annual payroll estimated at $775 million.

SAW-LOG OUTPUT UP

Saw-log production was up by more than 10 percent over 1964, and accounted for 43 percent of the total roundwood output. The number of sawmills continued to decline, and was down to 355 active mills in 1973. New technology, market fluctuation, rising production costs, and environmental restraints led to the closing of many of the old, inefficient mills. The strong lumber demand of the early seventies and the introduction of chipping headrigs sparked a general expansion and modernization within the lumber industry, now temporarily interrupted by the economic recession. The 1973 industry canvass counted 14 sawmills which had already installed chipping headrigs.

Bureau of the Census figures also reflect the strong upturn in lumber demand, particularly softwood, which occurred in the early seventies as the number of housing starts soared to record levels (fig. 6). Even with the increase, lumber production in North Carolina in 1973 was some 6 percent below the estimate for 1964. This apparent inconsistency between saw-log output and lumber production is explained by the diversion of large quantities of saw-log volume to chips at sawmills and the interstate movement of saw logs.

PULPWOOD PRODUCTION CONTINUED TO INCREASE

Pulpwood was the second leading product in terms of volume, and accounted for 40 percent of the total roundwood output. Volume of round pulpwood in 1973 totaled 251 million cubic feet, 63 percent greater than the estimate for 1964. Sawmills and other wood-using plants provided the pulpmills with another 73 million cubic feet of wood fiber in the form of chips and other plant byproducts. In fact, if the comparison of product output is made on total volume rather than roundwood, volume of pulpwood has now surpassed that of saw logs.

In 1964, five pulpmills operated in North Carolina with a combined pulping capacity of 4,525 tons per day. In 1973, eight pulpmills were in operation with a combined capacity of 6,275 tons per day. Even with this increase in pulping capacity, large quantities of pulpwood harvested in North Carolina are shipped to mills in other States. Based on the 1973 southern pulpwood production study, more than 925,000 cords of roundwood produced in the State were shipped to South Carolina and Virginia. Only about 400,000 cords harvested in these two States were shipped to mills in North Carolina.

Trends in pulpwood production reflect a modest shift in utilization from softwoods to the more

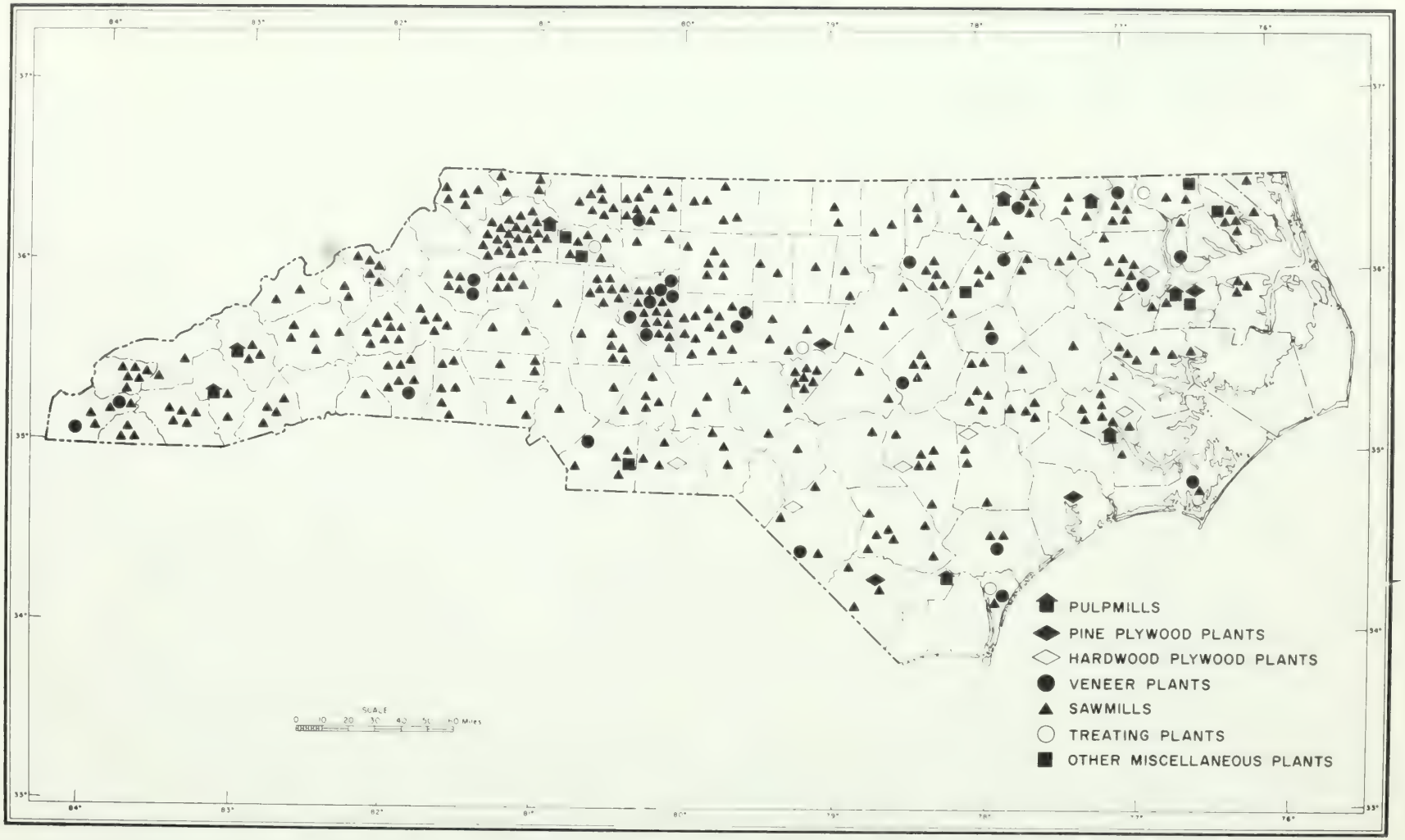


Figure 5. — Location of primary wood-using industries in North Carolina, 1973.

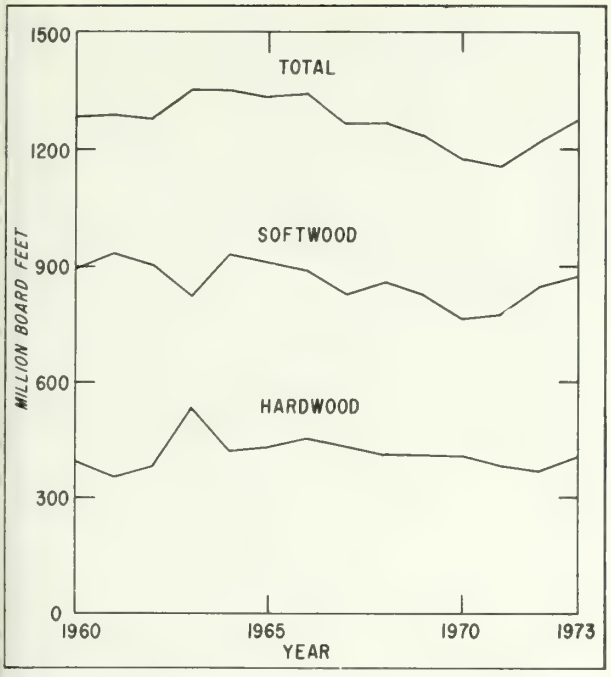


Figure 6. — Lumber production in North Carolina, 1960 to 1973.

abundant hardwoods (fig. 7). For example, hardwoods provided 34 percent of the total pulpwood output in 1973, compared to only 25 percent in 1964. Trends in the timber resource in North Carolina suggest that every opportunity for greater utilization of hardwood should be fully explored. The hardwood timber resources in North Carolina could easily accommodate an expansion of fiber-oriented industries.

The heavy use of sawtimber for pulpwood is highly significant. Although the timing of this latest Forest Survey coincided with a strong demand for lumber, some 500 million board feet of sawtimber were cut for pulpwood in 1973. Well over 40 percent of the total softwood output of round pulpwood came from the saw-log portion of sawtimber trees. Seemingly, these findings identify a gross under-utilization of an already scarce resource.

OUTPUT OF VENEER LOGS SOARS

Of all the major roundwood products, veneer logs registered the largest gain. Because of its furniture industry, North Carolina has long been a major producer of hardwood veneer and plywood. While foreign imports and substitute products have captured a substantial share of the hardwood veneer and plywood markets, development of the pine plywood industry in North Carolina has more than off-

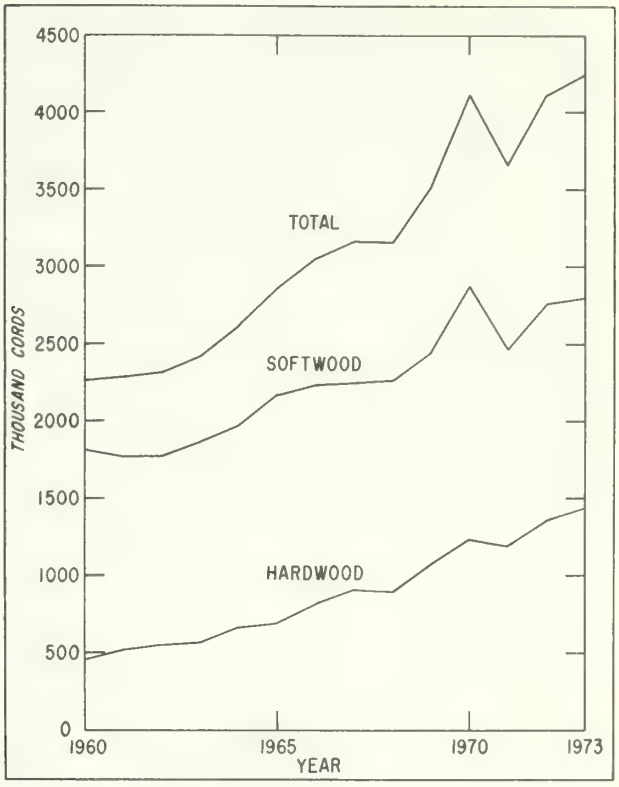


Figure 7. — Pulpwood production in North Carolina, including byproducts, 1960-1973.

set these losses in terms of product output and wood use. With all species combined, volume of veneer logs and bolts harvested in 1973 totaled more than 67 million cubic feet and accounted for almost 11 percent of total roundwood output. The comparable figure for 1964 was only 24 million cubic feet.

The first major pine plywood plant in North Carolina was constructed at Plymouth in the Northern Coastal Plain, and started up in 1965. In 1973, four pine plywood plants were in operation with a combined annual capacity of 400 million square feet on a ⅜-inch basis. Active hardwood plywood and veneer plants receiving roundwood in 1973 numbered 32, down from about 60 plants in 1964.

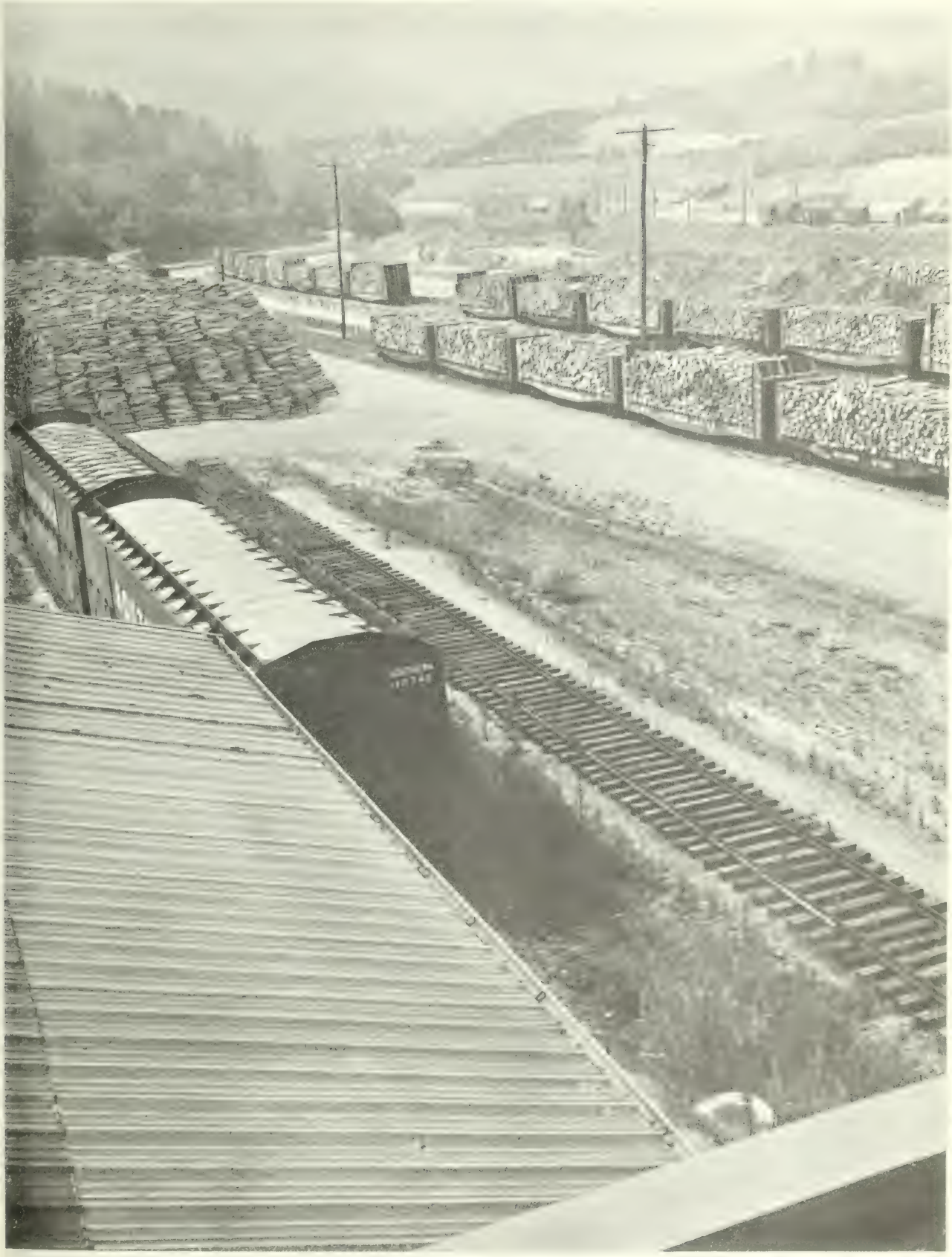
OUTPUT OF OTHER ROUNDWOOD PRODUCTS DOWN

The combined volume of all other roundwood products harvested in 1973 was estimated at 34 million cubic feet, or 50 percent below the 1964 estimate. In terms of volume, fuelwood is the leading product included in this miscellaneous grouping. While the long downward trend in fuelwood continued, a strong possibility exists for an upturn in

fuelwood use in response to the energy shortage. Other products included particleboard, poles, piling, posts, cooperage, and various specialty woods. About two-thirds of the volume in this miscellaneous group of products was hardwood.

INCREASE IN OTHER REMOVALS NULLIFIED GAINS FROM IMPROVED UTILIZATION

Closer utilization was evident, both in the woods and at the plants. For example, output of roundwood products was almost 27 percent greater than the output in 1964; yet, removal of growing stock during timber harvesting was up only 21 percent. A reduction in the amount of logging residue from 84 to 68 million cubic feet explains most of this difference. Estimated volume of wood residues generated at primary manufacturing plants was reduced from 66 to 30 million cubic feet. Altogether, these figures indicate a net saving of 52 million cubic feet through improved utilization. An increase in the volume of other removals from 59 to 109 million cubic feet nullified most of this gain. These other removals resulted primarily from land clearing and other actions where timber was removed from the inventory, but not used for products. Part of this volume is in trees still standing but on acreage no longer classified as commercial forest.



Timber Supply Outlook

Unlike many other natural resources, timber is renewable and expandable. Supplies can eventually be increased to the limits established by the growth potential of lands available for timber production. On the other hand, the lag between implementation of timber cultural practices and any significant increase in available supply is much longer than the lag experienced in most other land-based production endeavors. Except for possible gains from improved utilization and protection, the supply of timber that will be available in the next decade or longer has already been determined by actions taken or foregone. If one looks ahead for the next 30 years, much of the time restraint is removed from those opportunities for increasing timber supplies in North Carolina. The primary objective in this chapter of the analysis is to bracket future estimates of timber supplies between prospectively available cut if past trends are extrapolated for 30 years, and a level of available cut that more nearly reflects the inherent growth potential of North Carolina's forests. The results should not be misinterpreted as bold forecasts; they are reasonable estimates of what will likely happen if the stated assumptions hold true.

HARDWOODS DOMINATE PROSPECTIVE SUPPLY

In 1973, the net annual growth of growing-stock timber on commercial forest land in North Carolina totaled 1,124 million cubic feet, and included 3,969 million board feet of sawtimber. Net growth provides one estimate of the cut that could be sustained in the absence of significant change in either acreage or stand conditions. Changes are occurring, however, and to the extent that their results can be determined, refinements can be made in the estimate of prospectively available cut.

Several basic assumptions as to probable change over the next 30 years were made in this projection. Acreage of commercial forest land was assumed to continue to decline at the rate of 40,000 acres annually, or at about the same rate as the average between 1964 and 1974. Growth and mortality rates by diameter class and species group as determined in the latest survey were retained throughout the projection. Finally, an assumption was made that timber removals will gradually increase and come into balance with growth, by softwood and hardwood, by the end of the projection.

With these assumptions, available cut of total growing stock could reach a little more than 1,200 million cubic feet annually and include some 4,620 million board feet of sawtimber. The growing-stock estimate is 60 percent greater than the level of removals determined for 1973. When the results are examined by species group, one must conclude that hardwoods will increasingly dominate North Carolina's supply of timber if current trends continue (fig. 8). For example, under the assumptions stated, almost 80 percent of the prospective increase in available cut of total growing stock and almost 70 percent of the prospective increase in available sawtimber will be hardwood. Hardwood growth has already overtaken softwood growth in North Carolina, and if timber utilization follows the trend of prospective supply, hardwood cut should exceed softwood cut within the next 10 to 15 years.

The situation described has been brought about by forestry practices which have enabled hardwoods to replace pine on sites better suited for pine from the standpoint of timber production. Unless greater control over species composition is exercised through prompt and improved regeneration following harvesting, major adjustments in utilization seem inevitable. The alternatives all point toward fierce competition among wood-using industries that depend on pine timber while large inventories of low-quality hardwood accumulate.

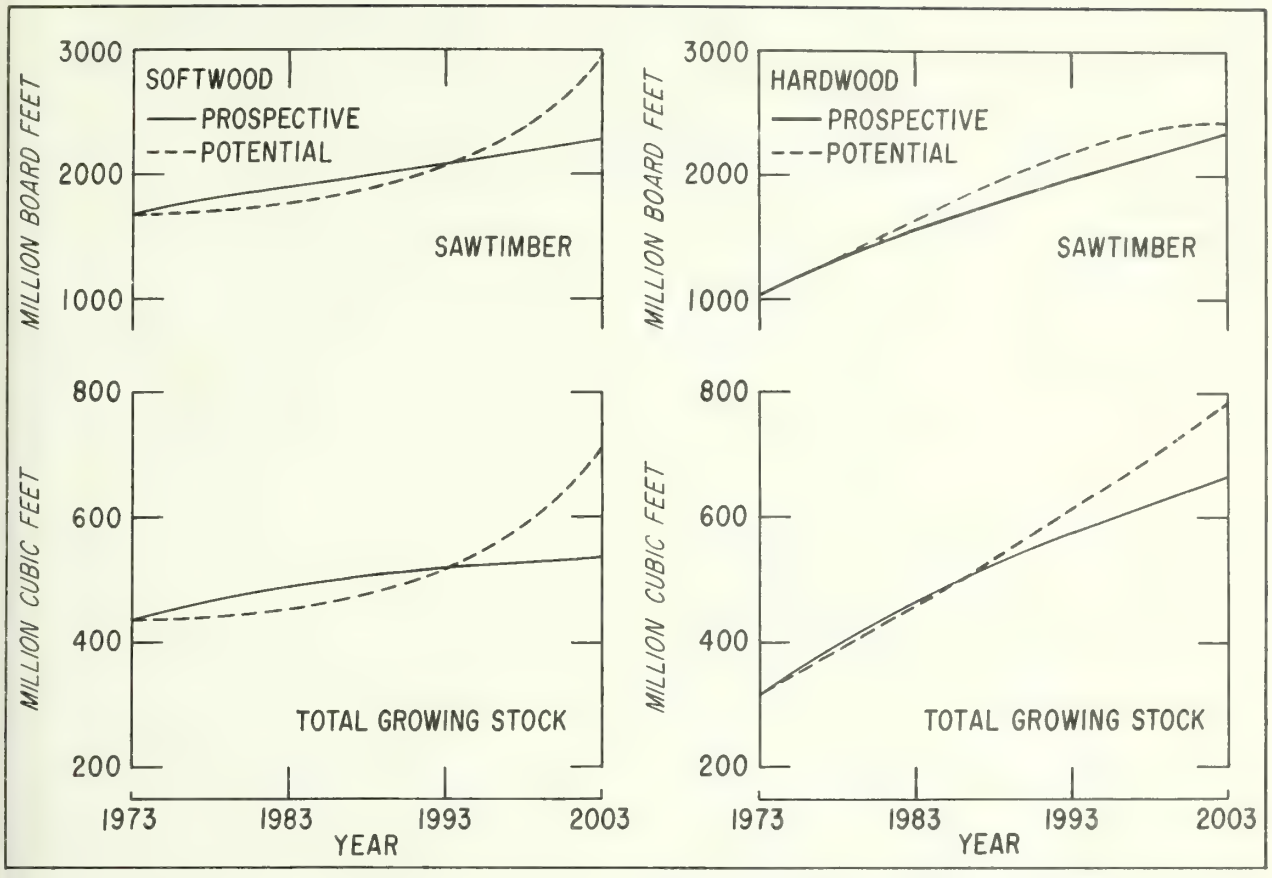


Figure 8. — Prospective and potential available cut, in North Carolina, 1973-2003.

PROSPECTIVE SUPPLY FROM PLANTATIONS

In the projections, adequate consideration has been given to timber supplies from already established plantations. Two independent estimates of the acreage involved are available. First, there are the annual reports of forest planting and seeding compiled by the USDA, Forest Service. These reports provide estimates of acres planted in North Carolina by ownership class (table IV). Based on this source, some 1.4 million acres had been planted through June 1974. Second, field crews determined the stand origin at each sample location visited in this latest survey. Based on these findings, evidence of tree planting was observed on 1.1 million acres (table V). It would appear that these two estimates are reasonably consistent with one another, and that liquidation over time could easily explain the difference.

During the late fifties, almost 110,000 acres were planted in North Carolina under the Conservation Reserve Soil-Bank Program, and planting across all ownerships peaked at about 87,400 acres in fiscal year 1959. Following the expiration

Table IV. — Acres of forest planting,[1] by ownership class, North Carolina, 1964-1974

Fiscal year	Ownership class				All ownerships	Accumulative total
	National Forest	Other public	Forest industry	Other private		
	Acres					
						[2]654,914
1964	4,208	2,023	30,286	15,619	52,136	707,050
1965	5,106	3,546	20,021	19,077	47,750	754,800
1966	2,695	2,853	27,745	18,585	51,878	806,678
1967	3,049	1,766	27,148	25,323	57,286	863,964
1968	4,008	3,921	42,702	15,312	65,943	929,907
1969	3,379	4,053	35,593	36,150	79,175	1,009,082
1970	4,758	3,672	54,561	18,770	81,761	1,090,843
1971	4,196	3,748	72,575	16,521	97,040	1,187,883
1972	3,493	3,750	27,760	22,155	57,158	1,245,041
1973	3,964	1,272	64,943	17,851	88,030	1,333,071
1974	3,755	6,923	55,044	15,814	81,536	1,414,607

[1] Includes acres of planting by direct seeding. Source: U. S. Department of Agriculture, Forest Service, *Forest and Windbarrier Planting and Seeding in the United States.*

[2] Accumulative total prior to FY 1964.

Table V. — Area of commercial forest land, by stand origin and Survey Unit, North Carolina, 1974

Stand origin	State		Survey Unit							
			Southern Coastal Plain		Northern Coastal Plain		Piedmont		Mountains	
	M acres	*Percent*	*M acres*	*Percent*	*M acres*	*Percent*	*M acres*	*Percent*	*M acres*	*Percent*
Natural stands with no evidence of artificial regeneration	18,423.4	94.3	4,840.9	89.8	3,792.3	92.3	5,843.8	96.9	3,946.4	98.3
Stands originating wholly or in part from artificial regeneration since 1964	843.2	4.3	430.8	8.0	262.2	6.4	127.0	2.1	23.2	0.6
Stands originating wholly or in part from artificial regeneration prior to 1964	278.2	1.4	120.2	2.2	55.9	1.3	57.2	1.0	44.9	1.1
All stands	19,544.8	100.0	5,391.9	100.0	4,110.4	100.0	6,028.0	100.0	4,014.5	100.0

of this program, planting dropped off rather sharply to a low of 47,750 in fiscal year 1965. Planting again accelerated as forest industries stepped up the conversion and regeneration of their own lands, and reached an all-time high of 97,000 acres in fiscal year 1971. With this apparent fluctuation in rate of planting, prospective timber supplies from plantations will likely vary considerably over the next 30 years. Based on the Forest Survey classifications, between 60,000 and 70,000 acres of pine plantations should start feeding into the prospective timber supply annually during the latter third of the projection period, assuming a 30-year rotation. Indications are that yields may average around 3,000 cubic feet per acre. These figures suggest a prospective cut of 200 million cubic feet annually from pine plantations. Natural stands will still supply most of the annual wood requirements.

Distribution of the acres planted by ownership class and region indicates that most of the prospective increase in timber supplies from plantations will occur on forest industry lands in the Coastal Plain. For example, 78 percent of the 1.1 million acres where evidence of tree planting was observed occurred in the Coastal Plain. About 16 percent occurred in the Piedmont, and the remaining 6 percent was in the Mountain region. Further examination shows that there were about 605,000 acres of well established pine plantations on lands owned or leased by forest industry in the Coastal Plain.

Statewide, well established pine plantations occupied just under 1 million acres when all ownerships were grouped. Because more than 60 percent of these plantations were less than 10 years old at time of measurement, the softwood growth rates determined and used in the projections might not fully reflect the prospective growth of these stands. As pointed out earlier, however, softwood growth rates in the Piedmont were inflated by unusually high ingrowth in natural stands, which will not likely be sustained. On balance, the growth rates used in the projection should provide a reasonable estimate of prospective timber supply.

PROSPECTIVE SUPPLY IS WELL BELOW POTENTIAL

Over the years, the substitution of other materials for wood has been widely promoted with varying degrees of success, but the demand for wood and timber products continues to increase. Supplies of some of these substitute materials are not renewable, and if they are exhausted, demands for wood could rise more quickly. It is important, therefore, that this analysis provides a reasonable estimate of the inherent growth potential of land available for timber production in North Carolina.

One quick and simple approach would be to weight the acreage of commercial forest land by site class. This calculation indicates a potential annual growth of 1,460 million cubic feet, and assumes that sites were accurately classified based on their growth capacity when fully stocked with natural stands. Surprising as it may seem, a more sophisticated approach produced an estimate only 2 percent greater. Furthermore, these estimates were only 6 and 8 percent below the potential estimated in the 1964 analysis where no reduction was assumed in forest acreage.

The aim of this latest projection was to establish a realistic maximum level of available cut which could be reached and sustained through improved

timber management over the next 30 years. The same assumption was made with regard to the decline in commercial forest area as was made in the prospective projection—a net loss of 40,000 acres annually. Management goals were expressed in terms of basal area per acre and a stand-structure quotient for both softwoods and hardwoods. The goals selected for projection control would allow average stand densities of growing-stock trees 5.0 inches d.b.h. and larger to increase from 56 to almost 80 square feet per acre. Although this goal calls for only a 15-percent gain over the prospective increase when all species are grouped, it would require a gain of almost 25 percent for softwoods through prompt and improved regeneration. The stand-structure quotient is the quotient of the number of trees in any 2-inch diameter class divided by the number in the next larger class and, in even-aged management, reflects the age distribution of the stands. The management goals assumed a stand-structure quotient of 1.7 for both softwoods and hardwoods. This quotient would require a rather large increase in the inventory of softwoods 15.0 inches d.b.h. and larger. Finally, it was assumed that mortality rates could be gradually reduced by 50 percent through better control over stocking and species composition. If all these conditions were met, net annual growth could be increased from 58 to 81 cubic feet per acre.

Results from this projection indicate a potential cut of 1,485 million cubic feet by year 2003, or almost double the 1973 level of removals. Available cut of sawtimber climbs to 5,340 million board feet. The most significant increase over prospective supplies would occur in the volume of softwood (fig. 8). A shift in utilization from softwood to hardwood early in the projection period along with improved regeneration of pine following harvesting would be required to achieve and sustain these levels of cut. Any further gains would have to be accomplished through some combination of site improvement, forest fertilization, genetic improvement, or acreage expansion.

STAND-AGE DISTRIBUTION FURTHER DESCRIBES SUPPLY OUTLOOK

The distribution of commercial forest acreage by stand-age class and major forest type reflects the history of forestry practices in North Carolina, and appears to support the stated conclusions about timber supply outlook (fig. 9). The profile of acreage supporting pine types reflects the accomplishments made in pine reforestation in the two youngest age classes—less than 10, and 10-19. Whatever increase in volume that results from this pine reforestation effort must come from increased yields and shorter rotations, in that no prospective increase in pine acreage of merchantable age is indicated over the next 30 years. The relatively small acreage of pine stands in the 20- to 29-year age class supports the widely voiced concern over a prospective gap in the pine supply prior to the time the plantations come of age.

The profile of hardwood acreage clearly shows a large accumulation of stands 40 years of age and older. Although many of these stands occur on either wet sites or steep, mountain slopes, hardwood stands collectively offer the greatest opportunity for increasing timber cut over the next 30 years. A sharp dropoff in the acreage of young, well-stocked hardwood stands reflects deficiencies in hardwood management which will have to be corrected before the full growth potential can be realized and sustained. Hardwoods dominated more than 2.2 million acres so poorly stocked that a manageable stand did not exist. About 46 percent of these acres had not experienced any significant treatment or disturbance during the past 10 years; therefore, their condition is not likely to improve significantly without some intervention. The poor stocking conditions on the remaining 54 percent were attributed to harvesting or other disturbance during the preceding 10 years. Perhaps the condition of some of these acres will improve over time, but hardwoods will dominate whatever stands develop unless there is further intervention. Many of these acres are pine sites that were harvested and left without regeneration.

Back on the pine side of the profile, 655,000 acres were so poorly stocked that a manageable stand did not exist. Half of these acres had not experienced any significant treatment or disturbance during the preceding 10 years. Most of these acres were on the Coastal Plain. Here again, the likelihood of improvement without treatment is remote.

The average volume per acre for each stand-age class provides a crude measure of minimum yields which can be expected from reasonably, well-stocked natural stands across the range of sites. These averages do not reflect actual performance in that the

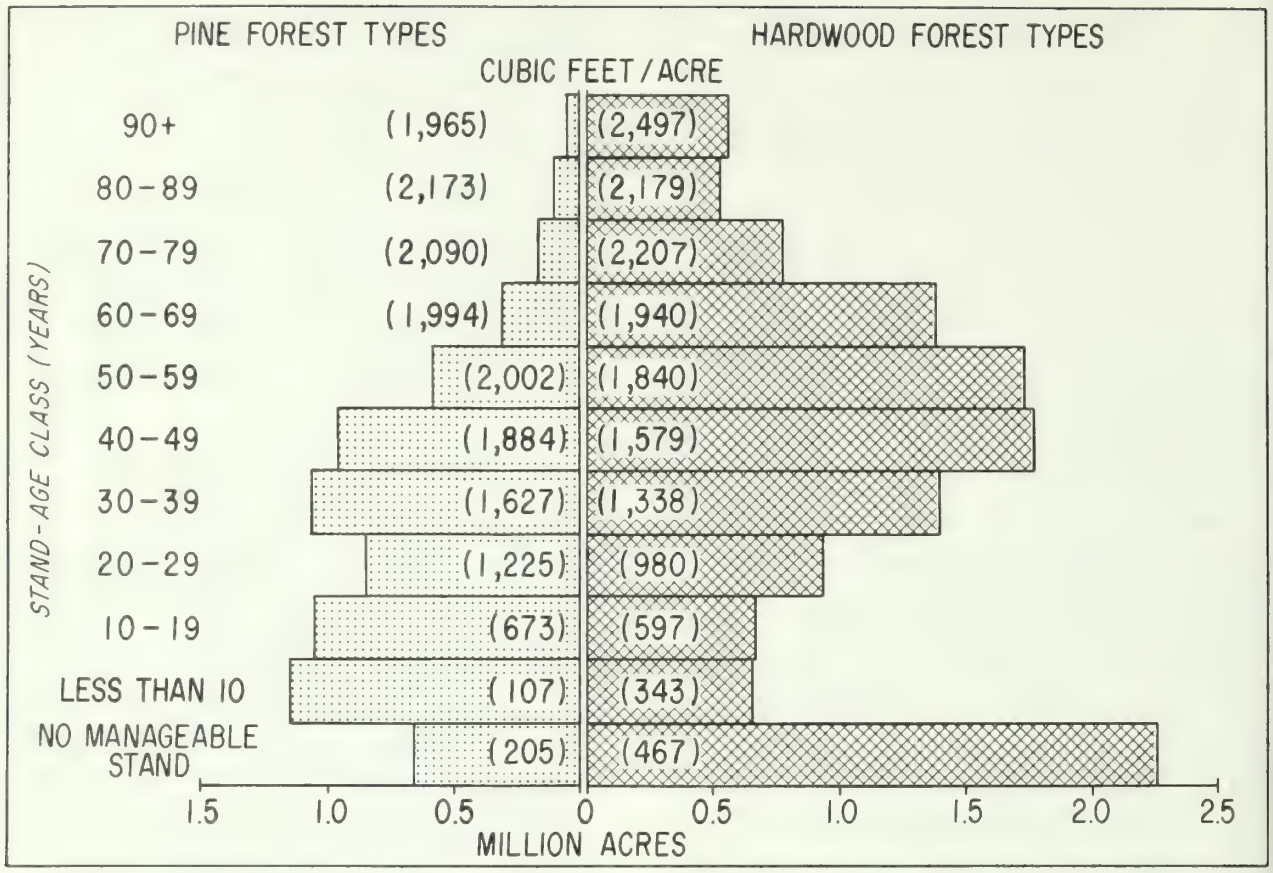


Figure 9. — Profile of area of commercial forest land, by stand-age class, by pine and hardwood forest types, with average cubic volume of growing stock per acre (in parentheses), North Carolina, 1974.

volumes removed through thinning and other intermediate cutting are not included. The strong correlations between average volume and stand age, and the low averages for acres classified as having no manageable stand, lends considerable credibility to the classification.

RECENT RATES OF FORESTRY ACTIVITIES

Before the management opportunities available for closing the gap between prospective and potential supply are discussed, recent rates of various forestry practices and activities should be examined. In this latest North Carolina survey, evidence of treatment or distrubance during the 10-year remeasurement period was noted at each sample location. A summary of this treatment and disturbance information by broad management and ownership classes provides a measure of recent forestry activities (table VI).

Timber harvesting was the most common forest activity observed. Of the 19.5 million acres classified as commercial forest in this latest survey, almost 2.9 million acres had been harvested since the 1964 survey. This means that almost 290,000 acres were harvested annually during the remeasurement period and retained in the commercial timber base. These figures exclude more than 1.1 million acres withdrawn or diverted to other land uses during the 10 years. Timber was also harvested and utilized on some of this acreage. Evidence of thinning or other types of intermediate cutting was observed on another 2.3 million acres. When the estimates of harvesting, intermediate cutting, and diversions are grouped, timber removals occurred on an average of 635,000 acres annually over the remeasurement period.

Observations of recent past treatment and disturbance indicated that 840,000 acres had either been artificially regenerated or planted. A breakdown of this reforestation effort shows that 64 percent was on forest acres that had also been harvested during the remeasurement period, and another 9 percent was on old fields. The remaining 27 percent

Table VI. — Area of commercial forest land, by broad management, ownership, and past treatment or disturbance classes, North Carolina, 1974

Broad management and ownership classes[1]	Total area	Primary treatment or disturbance between 1964 and 1974							
		Harvesting with artificial regeneration	Harvesting with natural regeneration	Other harvesting	Intermediate cutting	Artificial planting	Other treatment[2]	Natural disturbance	None
	Thousand acres								
Nonstocked forest:									
Public	69.2		6.4	17.0	3.5	—	8.3	3.3	30.7
Forest industry	92.2	3.9	7.6	38.3		—	2.6	5.2	34.6
Other private	326.4	—	17.2	117.4	3.1	—	35.0	34.5	119.2
Total	487.8	3.9	31.2	172.7	6.6		45.9	43.0	184.5
Pine plantations:									
Public	49.7	27.9	—	—	-	3.6	0.6	0.4	17.2
Forest industry	669.3	389.0			7.3	162.5	5.4		105.1
Other private	279.0	58.6		—	31.4	106.1	-	3.7	79.2
Total	998.0	475.5			38.7	272.2	6.0	4.1	201.5
Natural pine stands:									
Public	513.3		18.5	7.4	98.5	6.8	29.1	45.8	307.2
Forest industry	673.2	-	35.7	33.7	46.1		29.0	68.3	460.4
Other private	4,544.5		206.2	78.3	576.1		164.2	335.7	3,184.0
Total	5,731.0	-	260.4	119.4	720.7	6.8	222.3	449.8	3,951.6
Oak-pine stands:									
Public	158.1	5.7	11.9	--	29.1		15.1	7.7	88.6
Forest industry	266.9	38.0	24.2	20.4	16.9	9.1		17.8	140.5
Other private	2,058.9	—	102.7	98.0	324.7		82.8	88.4	1,362.3
Total	2,483.9	43.7	138.8	118.4	370.7	9.1	97.9	113.9	1,591.4
Upland hardwood stands:									
Public	865.1	1.4	8.2	15.7	74.6	1.9		27.4	735.9
Forest industry	237.6	8.2	27.2	17.5	19.7	2.3		1.8	160.9
Other private	6,146.1	3.8	446.0	555.4	768.3	5.5	194.9	78.4	4,093.8
Total	7,248.8	13.4	481.4	588.6	862.6	9.7	194.9	107.6	4,990.6
Bottomland hardwood stands:									
Public	90.0	—	3.7	22.2	10.4		2.1	13.5	38.1
Forest industry	376.4	2.6	15.1	22.5	19.5	3.7	13.5	3.0	296.5
Other private	2,128.9	—	124.6	240.4	318.2		74.1	45.0	1,326.6
Total	2,595.3	2.6	143.4	285.1	348.1	3.7	89.7	61.5	1,661.2
All classes:									
Public	1,745.4	35.0	48.7	62.3	216.1	12.3	55.2	98.1	1,217.7
Forest industry	2,315.6	441.7	109.8	132.4	109.5	177.6	50.5	96.1	1,198.0
Other private	15,483.8	62.4	896.7	1,089.5	2,021.8	111.6	551.0	585.7	10,165.1
Total	19,544.8	539.1	1,055.2	1,284.2	2,347.4	301.5	656.7	779.9	12,580.8

[1] Forest industry includes lands under long-term lease.

[2] Includes grazing, draining, prescribed burning, site preparation, and other miscellaneous treatments.

of the tree planting effort apparently was directed toward the backlog of acreage needing regeneration.

Other significant treatments or disturbances by man were observed on 657,000 acres. Such disturbances include forest grazing, drainage efforts, prescribed burning, site preparation, and other miscellaneous actions. An additional 780,000 acres experienced significant natural disturbance from insect infestations, wildfire, disease, and weather, such as wind and ice storms. These estimates do not fully reflect the extent of these treatments and disturbances in that they also occurred on acres where other practices had a greater impact on existing stand conditions.

ALMOST TWO-THIRDS OF THE STANDS WERE UNDISTURBED

On some 12.6 million acres, or 64 percent of the land classified as commercial forest, there was no evidence of significant treatment or disturbance during the 10-year remeasurement period. By region, the proportion of undisturbed stands ranged from a high of 78 percent in the Mountains to a low of 56 percent in the Coastal Plain. By ownership class,

the proportion of undisturbed stands ranged from a high of 70 percent for publicly owned lands to a low of 52 percent for lands owned or leased by forest industries. By broad management class, the proportion undisturbed ranged from a high of 69 percent for both natural pine and upland hardwood stands to a low of 20 percent for pine plantations.

Almost 23 percent of the undisturbed stands were on sites unfavorable for intensive silvicultural practices either because of steep slopes or year-around water problems. Only 8 percent of the treated or disturbed stands occurred on similar sites.

Management Opportunities

It is instructive to divide commercial forest land into condition classes that reflect prospective growth. Stand condition was estimated at each sample location based on volume, stocking, species composition, stand age, mortality, and site. From this information, it was possible to estimate acreages on which there were treatment opportunities for broad management and ownership classes (table VII).

ADVERSE SITES LIMIT OPPORTUNITIES ON 3.4 MILLION ACRES

Our first step in estimating acreages that present timber management opportunities in North Carolina was to eliminate the areas where steep slopes or year-around water problems preclude intensive forestry. Areas on slopes of 40 percent or steeper were eliminated, and the severity of the water problem was based on the survey crew's judgment on the ground. Based on these criteria, the timber management opportunities are severely limited on 3.4 million acres, or almost 18 percent of the commercial forest land. The logic applied in this analysis assumed that limited funds and resources probably will not be expended on these adverse sites so long as more promising opportunities are available for attracting silvicultural investments. The rate of recent treatment of these adverse sites tends to support this assumption. For example, 84 percent of this acreage was not significantly treated or disturbed over the past 10 years.

By region, the proportion of total acreage of commercial forest land classified as adverse ranged from a high of 57 percent in the Mountains to a low of 4 percent in the Piedmont. Adverse sites limited management opportunities on about 10 percent of the acreage in the Coastal Plain. By ownership class, the proportion of adverse sites ranged from a high of 44 percent of publicly owned timberland to a low of 11 percent of lands owned or leased by forest industries. About 15 percent of the commercial forest land owned by other private owners was classified as adverse. Statewide, hardwoods predominated the stocking on almost 90 percent of the acreage classified as adverse.

ALMOST 9.1 MILLION ACRES SUITABLE FOR MANAGEMENT SUPPORTED STANDS IN GOOD CONDITION

In estimating opportunity acreages, we also eliminated stands that were already in relatively good condition. To qualify for elimination, these stands had to be immature, adequately stocked with trees of acceptable quality, free from significant competition, and located on manageable sites. Statewide, these conditions were met on almost 9.1 million acres, or 46 percent of the commercial forest land.

By region, the proportion of acreage suitable for timber management which supported stands in good condition ranged from a high of 68 percent in the Mountains to a low of 52 percent in the Coastal Plain. By ownership class, the proportion ranged from a high of 64 percent on lands owned or leased by forest industry to a low of 52 percent for other private owners.

OPPORTUNITIES IDENTIFIED ON 7.1 MILLION ACRES

The deductive process described assumes that timber growth could be significantly enhanced on the remaining 7.1 million acres, or 36 percent of the commercial forest. Conditions on these acres ranged from serious damage or overmaturity to deficiencies in stocking. The approximate acreages for various treatment opportunities are summarized below.

Table VII. — Area of idle cropland and commercial forest land, by broad management, ownership, and treatment opportunity classes, North Carolina, 1974

Broad management and ownership classes[1]	Total area	Broad treatment opportunity classes							
		Salvage	Harvest	Commercial thinning	Other stand improvement	Stand conversion[2]	Regeneration	Stands in relatively good condition	Adverse sites or conditions[3]
	Thousand acres								
Idle cropland:									
Public	—	—	—	—	—	—	—	—	—
Forest industry	—	—	—	—	—	—	—	—	—
Other private	563.0	—	—	—	—	—	563.0	—	—
Total	563.0	—	—	—	—	—	563.0	—	—
Nonstocked forest:									
Public	69.2	—	—	—	—	—	52.0	—	17.2
Forest industry	92.2	—	—	—	—	—	82.9	—	9.3
Other private	326.4	—	—	—	—	—	275.4	—	51.0
Total	487.8	—	—	—	—	—	410.3	—	77.5
Pine plantations:									
Public	49.7	—	—	4.0	—	—	4.0	34.9	6.8
Forest industry	669.3	—	—	26.1	32.5	2.5	6.4	601.8	—
Other private	279.0	—	—	68.5	18.5	—	7.9	164.5	19.6
Total	998.0	—	—	98.6	51.0	2.5	18.3	801.2	26.4
Natural pine stands:									
Public	513.3	0.2	58.2	13.0	12.4	3.3	57.3	303.4	65.5
Forest industry	673.2	8.9	69.6	34.0	57.6	10.1	96.0	365.6	31.4
Other private	4,544.5	120.5	321.7	477.2	351.8	220.0	263.5	2,599.5	190.3
Total	5,731.0	129.6	449.5	524.2	421.8	233.4	416.8	3,268.5	287.2
Oak-pine stands:									
Public	158.1	—	14.4	—	2.1	3.4	22.8	84.0	31.4
Forest industry	266.9	0.1	26.9	4.1	34.7	2.4	46.0	144.7	8.0
Other private	2,058.9	24.7	198.8	22.7	199.4	164.6	189.5	1,137.5	121.7
Total	2,483.9	24.8	240.1	26.8	236.2	170.4	258.3	1,366.2	161.1
Upland hardwood stands:									
Public	865.1	—	42.9	—	8.9	—	43.4	138.0	631.9
Forest industry	237.6	—	11.8	—	18.6	14.8	33.4	107.4	51.6
Other private	6,146.1	7.2	464.4	11.9	385.0	624.2	672.6	2,510.8	1,470.0
Total	7,248.8	7.2	519.1	11.9	412.5	639.0	749.4	2,756.2	2,153.5
Bottomland hardwood stands:									
Public	90.0	3.0	1.5	—	3.7	3.4	22.3	43.5	12.6
Forest industry	376.4	—	48.6	2.6	17.8	5.1	48.6	89.2	164.5
Other private	2,128.9	2.7	269.8	36.9	101.5	73.8	386.3	726.6	531.3
Total	2,595.3	5.7	319.9	39.5	123.0	82.3	457.2	859.3	708.4
All classes:									
Public	1,745.4	3.2	117.0	17.0	27.1	10.1	201.8	603.8	765.4
Forest industry	2,315.6	9.0	156.9	66.8	161.2	34.9	313.3	1,308.7	264.8
Other private	16,046.8	155.1	1,254.7	617.2	1,056.2	1,082.6	2,358.2	7,138.9	2,383.9
Total	20,107.8	167.3	1,528.6	701.0	1,244.5	1,127.6	2,873.3	9,051.4	3,414.1

[1] Forest industry includes lands under long-term lease.
[2] Areas occupied with species unsuitable for the site from the standpoint of timber productions.
[3] Areas where management opportunities are severely limited because of steep slopes or poor drainage.

One of the most feasible opportunities for increasing timber supplies is to liquidate and regenerate merchantable stands that have either reached maturity or been damaged to the extent that salvage should be considered. Almost 1.7 million acres supported such stands. A large share of the State's mortality occurred in these high-risk stands, and continued loss is inevitable unless these stands are liquidated and regenerated. Volume per acre averaged 1,790 cubic feet for the damaged stands and almost 2,190 cubic feet for the mature stands. Average age was 44 years for the damaged stands and 73 years for the mature stands. More than half of the salvage opportunities were in the Piedmont region.

Commercial thinning opportunities were identified on 0.7 million acres. These were immature

stands averaging 31 years of age and supporting an average of 2,260 cubic feet of growing-stock volume per acre. Pre-commercial thinning, cleaning, release, or other stand improvement practices would enhance growth on another 1.2 million acres where volume per acre averaged 1,040 cubic feet and stand age averaged 22 years. Altogether, more than 1.9 million acres present intermediate treatment opportunities.

On 1.1 million acres, the existing species composition was obviously incompatible with the site from the standpoint of timber production. For the most part, these were pine sites supporting low-quality hardwood stands. On the average, these stands were 80 percent stocked with trees that met the minimum standards for growing stock. Volume per acre averaged less than 680 cubic feet, and stand age averaged 27 years. There will be substantial growth loss on these acres until they are converted to more suitable species. Almost 60 percent of these stands are in the Piedmont region.

Some 2.3 million acres of commercial forest land suitable for management were so poorly stocked that manageable stands did not exist. On the average, these acres were less than 40 percent stocked with trees that met the minimum standards for growing stock, and merchantable volume averaged only 380 cubic feet per acre. These stands were almost 50 percent stocked with rough trees, rotten trees, and other inhibiting vegetation, which means that the conditions probably will not improve significantly without site preparation and regeneration.

In addition to the treatment opportunities identified on 7.1 million acres of commercial forest land, almost 0.6 million acres were classified as idle cropland and included as part of the regeneration opportunity in table VII. Owners that are receptive should be encouraged to plant trees on these idle lands. Site preparation and planting costs would average considerably less on these acres than would normally be required on cut-over or poorly stocked forest land.

This analysis is deliberately focused on existing deficiencies and prospective problems facing forestry in North Carolina. The orientation of this report should not be interpreted to mean that no progress is being made. The sizable buildup in inventory volume and the increase in growth rate over the past decade show that there has been great progress. Most of the deficiencies and problems described can be corrected through well-planned and coordinated programs and actions.

Any action program that is considered should concentrate on regeneration efforts immediately after harvesting, because regeneration failures after timber cutting are the major cause for poorly stocked stands in North Carolina. Site preparation for natural seeding or for planting is cheapest if it is done immediately after a harvest. Delays permit competing vegetation of low value to get firmly established and raise costs considerably. Furthermore, the landowner is most likely to have cash to invest in regeneration right after a timber harvest. Because the trend in natural succession is from pines to hardwoods, pine stands cannot be maintained in North Carolina without effort. The effort required is least if it is done in conjunction with timber harvesting.

HOW THE SURVEY WAS MADE

A. CHECKING AERIAL PHOTOS

B. USE OF COMPUTER

C. FIELD CHECKING INDIVIDUAL STANDS.

Appendix

PROCEDURE

The basic steps of the procedure used in the fourth forest resources evaluation of North Carolina's timberlands were:

1. Initial estimates of forest and nonforest areas were based on the classification of 108,579 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 8,171 of these 16-point clusters was checked on the ground, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provided a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 4,882 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these locations. Trees less than 5.0 inches d.b.h. were tallied on fixed-radius plots around the point centers.

3. Equations developed from detailed measurements collected on trees tallied at 303 sample locations were used to compute the volumes of individual tally trees of the major species. Similar measurements taken throughout the Southeast were used to supplement the North Carolina data in the development of volume prediction equations for the minor species. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations. Felled trees were measured at 91 active cutting operations to provide utilization factors for product and species groups, and to supplement the standing-tree volume study.

4. Estimates of growth, removals, and mortality were determined from the remeasurement of 4,895 permanent sample locations which were established in the third survey. A 1973 survey of timber products output, conducted by the North Carolina Department of Natural & Economic Resources, along with the annual pulpwood production study in the South, provided additional information for breakdowns of removals by product.

5. Ownership information was collected from public records, correspondence, and direct contacts. In those counties where the sample missed a particular ownership class, temporary samples were added and measured to describe the forest conditions within the ownership class.

6. All field data were sent to Asheville for editing and were punched on cards and stored on magnetic tape for computer processing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

7. As each of the four survey units in North Carolina was completed, special summaries of the information were added to a master data bank of forest resource statistics maintained for the entire Southeast in Asheville. A Forest Information Retrieval (FIR) program is available for compiling the information for any area of interest as a cooperative service.

RELIABILITY OF THE DATA

Statistical analysis of the data indicates a sampling error of ±0.24 percent for the estimate of total commercial forest area, 1.11 percent for total cubic-foot volume, 1.20 percent for total cubic-foot volume growth, and 2.78 percent for total cubic-foot removals. As the totals are broken down by forest type, species, tree diameter, and other subdivisions, the sampling error increases. If homogeneity of variances is assumed the order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable, in terms of one standard error, or two chances out of three.

Sampling error[1]	Commercial forest area	Volume of growing stock		
		Inventory	Net growth	Removals
Percent	*Thousand acres*	*Million cubic feet*		
1	1,107.1	–	–	–
2	276.8	7,655.1	404.8	–
3	123.0	3,402.3	179.9	–
4	69.2	1,913.8	101.2	483.4
5	44.3	1,224.8	64.8	309.4
10	11.1	306.2	16.2	77.3
15	4.9	136.1	7.2	34.4
20	2.8	76.6	4.0	19.3
25	1.8	49.0	2.6	12.4

[1]By random-sampling formula.

DEFINITIONS OF TERMS

Acceptable trees.—Growing-stock trees of commercial specie that meet specified standards of size and quality, but not quali fying as desirable trees.

Available cut.—The volume of timber that would be available for cutting on commercial forest land during a given period under specified assumptions concerning growth, cut, mortality, and forest management practices.

Basal area.—The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.—Tree species suitable for industrial wood products.

Cropland.—Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.—Growing-stock trees of commercial species having no serious defects in quality that limit present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.—A classification of trees based on diameter outside bark (d.o.b.), measured at breast height (4½ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.00 through 6.99 inches d.b.h., inclusive.

Farm.—Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.—A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.—Lands owned by farm operators.

Forest industry lands.—Lands owned by companies or individuals operating wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.—A classification of forest land based upon the species forming a plurality of live-tree stocking.

White-red-jack pine.—Forests in which eastern white pine, red pine, or jack pine, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, aspen, birch, and maple.)

Spruce-fir.—Forests in which spruce or true firs, singly or in combination, comprise a plurality of the stocking. (Common associates include white cedar, tamarack, maple, birch, and hemlock.)

Longleaf-slash pine.—Forests in which longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.—Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.—Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.—Forests in which elm, ash, or cottonwood, singly or in combination, comprise a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Maple-beech-birch.—Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

Gross growth.—Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.—Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.—Soft-textured hardwoods, such as boxelder, red and silver maple, hackberry, loblolly-bay, sweetgum, yellow-poplar, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.—Hard-textured hardwoods such as sugar maple, birch, hickory, dogwood, persimmon (forest grown), black locust, beech, ash, honeylocust, holly, black walnut, mulberry, and all commercial oaks.

Idle farmland.—Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.—All roundwood products except fuelwood.

Ingrowth.—The number or net volume of trees that grow large enough during a specified year to qualify as saplings, poletimber, or sawtimber.

Inhibiting vegetation.—Cover sufficiently dense to prevent the establishment of tree seedlings.

Land area.—The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide), streams, sloughs, estuaries, and canals less than ⅛ of a statute mile in width, and lakes, reservoirs, and ponds less than 40 acres in area.

Log grade.—A classification of logs based on external characteristics as indicators of quality or value.

Logging residues.—The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.—Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands—corporate.—Lands owned by private corporations other than forest industry.

Miscellaneous private lands—individual.—Privately owned lands other than forest industry, farmer-owned, or corporate lands.

Mortality.—Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.—Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.—The increase in volume for a specific year.

Net volume.—Gross volume of wood less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests and land formerly forested where timber production is precluded by development for other uses.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.—Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.—Publicly owned lands other than National Forests.

Other removals.—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber stand improvement, land clearing, and other changes in land use that result in the removal of the trees from the commercial forest.

Overstocked areas.—Areas where growth of trees is significantly reduced by excessive numbers of trees.

Plant byproducts.—Wood products such as pulp chips, obtained incidental to production of other manufactured products.

Plant residues.—Wood materials from manufacturing plants not utilized for some product.

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Quality class.—A classification of sawtimber volumes by log or tree grades.

Rangeland.—Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.—(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Roundwood products.—Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Salvable dead trees.—Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.—Live trees 1.0 inch to 5.0 inches in diameter at breast height.

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.—That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.—Live trees of commercial species containing at least a 12-foot saw log, or two contiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.—Net volume of the saw-log portion of live sawtimber in board-foot International ¼-inch rule.

Seedlings.—Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.—Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.—Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.—Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.—Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.—Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.—Yellow pine species which include loblolly, longleaf, slash, pond, shortleaf, pitch, Virginia, and Table-Mountain pine.

Other softwoods.—Cypress, eastern redcedar, white cedar, eastern white pine, eastern hemlock, spruce, and fir.

Stand-size class.—A classification of forest land based on the diameter class of growing-stock trees on the area.

Sawtimber stands.—Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber and poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.—Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.—Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.—The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See table at end of definitions.)

Fully stocked.—100 percent or more stocking

Medium stocked.—60 to 100 percent stocking

Poorly stocked.—Less than 60 percent stocking

Survivor growth.—The increase in volume of growing-stock trees that survive cutting and mortality for a specified year.

Timber products.—Roundwood products and plant by-products.

Timber removals.—The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.—Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.—That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.—Areas within the legal boundaries of cities and towns, suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

Stocking Standard

D.b.h. class	Minimum number trees per acre for full stocking	Minimum basal area per acre for full stocking	Percent stocking assigned each tally tree[1]
Seedlings	600	—	5.0
2	560	—	5.4
4	460	—	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1]Trees less than 5.0 inches d.b.h. were tallied on a 10-point cluster of circular, 1/300-acre plots at each sample location. Trees 5.0 inches d.b.h. and larger were tallied on a 10-point cluster of variable plots using a basal area factor of 37.5 at each sample location.

Overstocked — over 130 percent
Fully stocked — 100-130 percent
Medium stocked — 60-99 percent
Poorly stocked — 16.7-59 percent
Nonstocked — less than 16.7 percent

CONVERSION FACTORS
Cubic feet of wood per average cord (excluding bark)

D.b.h.	Pine	Other softwoods	Hardwood
6	61.0	68.2	59.9
8	68.1	76.1	68.4
10	73.1	81.4	73.4
12	76.7	85.2	76.4
14	79.4	88.1	78.4
16	81.6	90.4	79.8
18	83.3	92.4	80.8
20	84.8	93.7	81.5
22	86.0	95.0	82.1
24+	87.9	98.0	83.1
Average	73.8	85.9	74.5

Rough cords per M cubic feet (without bark) =

$$a + b\left(\frac{1}{D.b.h}\right) + c\left(\frac{1}{D.b.h.}\right)^2$$

Where	*Pine*	*Other softwoods*	*Hardwood*
a =	10.01850	9.15960	11.68410
b =	34.42135	28.75793	3.74431
c =	22.73994	25.54418	157.39417

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Table 1. — Area by land classes, North Carolina, 1974

Land class	Area
	Acres
Forest land:	
Commercial	19,544,835
Productive-reserved	433,792
Unproductive	46,230
Total	20,024,857
Nonforest land:	
Cropland	6,402,053
Pasture and range	1,808,363
Other[1]	3,052,268
Total	11,262,684
All land[2]	31,287,541

[1] Includes swampland, industrial and urban areas, other nonforest land, and 232,428 acres classed as water by Forest Survey standards but defined by Bureau of Census as land.

[2] From U. S. Bureau of the Census, Land and Water Area of the United States, 1970.

Table 2. — Area of commercial forest land, by ownership classes, North Carolina, 1974

Ownership class	Area
	Acres
National Forest	1,011,434
Other Federal:	
Bureau of Land Management	—
Indian	52,418
Miscellaneous Federal	283,327
Total other Federal	335,745
State	320,385
County and municipal	77,886
Forest industry[1]	2,134,793
Farmer-owned	8,452,435
Miscellaneous private:	
Individual	5,970,136
Corporate	1,242,021
Total miscellaneous private	7,212,157
All ownerships	19,544,835

[1] Not including 180,775 acres of farmer-owned and miscellaneous private lands leased to forest industry.

Table 3. — Area of commercial forest land, by stand-size and ownership classes, North Carolina, 1974

Stand-size class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
			Acres		
Sawtimber	8,211,834	619,796	315,549	546,356	6,730,133
Poletimber	6,292,195	279,042	214,149	548,540	5,250,464
Sapling and seedling	4,552,997	85,328	162,344	953,572	3,351,753
Nonstocked	487,809	27,268	41,974	86,325	332,242
All classes	19,544,835	1,011,434	734,016	2,134,793	15,664,592

Table 4. — Area of commercial forest land, by stand volume and ownership classes, North Carolina, 1974

Stand volume per acre[1]	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
			Acres		
Less than 1,500 board feet	7,436,245	220,773	387,376	1,265,690	5,562,406
1,500 to 5,000 board feet	6,621,002	396,379	247,178	478,474	5,498,971
More than 5,000 board feet	5,487,588	394,282	99,462	390,629	4,603,215
All classes	19,544,835	1,011,434	734,016	2,134,793	15,664,592

[1] International ¼-inch rule.

Table 5. — Area of commercial forest land, by stocking classes based on selected stand components, North Carolina, 1974

Stocking percentage	Stocking classified in terms of:					
	All live trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
			Acres			
160	6,973	884				
150-159	131,608	47,959		9,954		
140-149	317,604	138,004		43,872		
130-139	2,541,094	490,873	23,596	106,656		
120-129	2,256,414	994,066	32,435	177,201	3,125	
110-119	2,827,153	1,432,409	75,931	375,688	25,444	
100-109	4,974,138	2,540,304	502,653	510,657	67,698	
90-99	2,163,007	2,537,677	234,665	757,466	93,642	60,090
80-89	1,645,104	2,710,932	449,298	1,176,432	138,364	8,714
70-79	905,727	2,547,348	778,421	1,490,534	339,167	41,091
60-69	598,047	1,817,511	1,139,614	1,989,957	487,885	87,728
50-59	392,127	1,441,919	1,543,346	2,214,721	787,458	81,246
40-49	222,279	1,103,204	2,084,744	2,616,028	1,499,045	118,331
30-39	207,608	645,758	2,489,815	2,548,023	2,157,877	297,571
20-29	128,829	497,388	2,547,972	1,976,375	3,134,004	375,013
10-19	57,463	265,494	2,971,311	1,448,576	4,185,609	751,261
Less than 10	169,660	332,905	4,671,034	2,102,695	6,625,517	17,723,790
Total	19,544,835	19,544,835	19,544,835	19,544,835	19,544,835	19,544,835

Table 6. — Area of commercial forest land, by ownership and stocking classes,[1] with percent occupancy by selected stand components, North Carolina, 1974

Ownership and stocking class	Area	Stand components					
		Growing-stock trees			Rough and rotten trees	Inhibiting vegetation	Nonstocked
		Total	Desirable	Acceptable			
	Acres	*Percent of area*					
National Forest:							
Fully stocked stands	225,250	94.0	18.1	75.9	6.0		
Medium stocked stands	571,285	75.9	13.4	62.5	19.4	2.1	2.6
Poorly stocked stands	214,899	34.9	6.2	28.7	23.5	31.1	10.5
All stands	1,011,434	71.7	13.1	58.6	16.8	7.8	3.7
Other public:							
Fully stocked stands	137,426	94.0	42.8	51.2	6.0		
Medium stocked stands	279,483	77.5	30.3	47.2	16.1	1.9	4.5
Poorly stocked stands	317,107	38.8	16.6	22.2	29.5	13.9	17.8
All stands	734,016	71.9	30.5	41.4	16.6	4.7	6.8
Forest industry:							
Fully stocked stands	835,286	95.3	54.7	40.6	4.7		
Medium stocked stands	874,001	74.5	36.7	37.8	20.8	2.1	2.6
Poorly stocked stands	425,506	31.4	12.2	19.2	30.8	16.8	21.0
All stands	2,134,793	74.9	39.5	35.4	16.1	4.0	5.0
Farmer & misc. private:							
Fully stocked stands	4,446,537	93.0	37.8	55.2	7.0		
Medium stocked stands	7,888,899	74.8	32.1	42.7	21.2	1.5	2.5
Poorly stocked stands	3,329,156	38.3	15.5	22.8	39.4	9.9	12.4
All stands	15,664,592	73.5	30.6	42.9	20.1	2.7	3.7
All ownerships:							
Fully stocked stands	5,644,499	93.5	40.5	53.0	6.5		
Medium stocked stands	9,613,668	75.0	31.7	43.3	20.8	1.6	2.6
Poorly stocked stands	4,286,668	37.2	14.6	22.6	36.7	12.1	14.0
All stands	19,544,835	73.6	31.2	42.4	19.2	3.2	4.0

[1] Based on degree of growing-stock stocking.

Table 7. — Area of commercial forest land, by site and ownership classes, North Carolina, 1974

Site class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
	Acres				
165 cu. ft. or more	96,375	11,356		9,182	75,837
120 to 165 cu. ft.	293,555	49,543	5,560	27,037	211,415
85 to 120 cu. ft.	3,273,037	114,138	38,346	339,383	2,781,170
50 to 85 cu. ft.	12,134,194	542,802	324,733	1,319,953	9,946,706
Less than 50 cu. ft.	3,747,674	293,595	365,377	439,238	2,649,464
All classes	19,544,835	1,011,434	734,016	2,134,793	15,664,592

Table 8. — Area of commercial forest land, by forest types and ownership classes, North Carolina, 1974

Type	All ownerships	Public	Private
	Acres		
Softwood types:			
White pine-hemlock	142,841	11,877	130,964
Spruce-fir	12,714	4,811	7,903
Longleaf pine	460,972	151,226	309,746
Slash pine	94,002		94,002
Loblolly pine	3,265,216	126,120	3,139,096
Shortleaf pine	763,066	16,019	747,047
Virginia pine	878,777	23,777	855,000
Eastern redcedar	28,430	6,822	21,608
Pond pine	1,196,885	217,604	979,281
Pitch pine	61,685	43,824	17,861
Total	6,904,588	602,080	6,302,508
Hardwood types:			
Oak-pine	2,483,865	158,075	2,325,790
Oak-hickory	6,870,097	719,178	6,150,919
Chestnut oak	215,378	102,423	112,955
Southern scrub oak	163,394	27,277	136,117
Oak-gum-cypress	2,237,447	63,495	2,173,952
Elm-ash-cottonwood	440,426	26,569	413,857
Maple-beech-birch	229,640	46,353	183,287
Total	12,640,247	1,143,370	11,496,877
All types	19,544,835	1,745,450	17,799,385

Table 9. — Area of noncommercial forest land, by forest types, North Carolina, 1974

Type	All areas	Productive-reserved areas	Unproductive areas
	Acres		
White pine-hemlock	3,865	3,865	–
Spruce-fir	5,885	4,660	1,225
Longleaf-slash pine	603	603	
Loblolly-shortleaf pine	50,996	24,714	26,282
Oak-pine	10,564	10,023	541
Oak-hickory	393,993	383,701	10,292
Oak-gum-cypress	9,116	1,226	7,890
Maple-beech-birch	5,000	5,000	
All types	480,022	433,792	46,230

Table 10. — Number of growing-stock trees on commercial forest land, by species and diameter classes, North Carolina, 1974

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand trees										
Softwood:											
Longleaf pines	48,285	16,204	13,011	8,739	5,950	2,813	1,044	397	80	47	–
Slash pine	8,401	6,610	1,683	98	–	–	10	–	–	–	–
Shortleaf pine	201,780	85,297	59,083	34,816	14,492	5,629	1,628	567	174	94	–
Loblolly pine	452,723	180,975	108,131	64,689	43,756	27,397	15,441	7,336	2,914	2,023	61
Pond pine	138,379	62,129	36,505	21,949	9,627	4,993	2,069	721	302	84	–
Virginia pine	166,046	83,466	48,194	23,149	7,908	2,476	643	169	41	–	–
Pitch pine	23,486	8,504	6,926	4,327	1,998	933	520	166	95	17	–
Table-Mountain pine	3,077	1,422	838	215	343	180	57	–	–	22	–
Spruce pine	–	–	–	–	–	–	–	–	–	–	–
Sand pine	–	–	–	–	–	–	–	–	–	–	–
Eastern white pine	27,820	7,102	7,974	4,382	2,765	2,101	1,440	979	409	563	105
Eastern hemlock	12,243	5,910	1,977	1,535	578	951	424	164	309	308	87
Spruce and fir	2,373	467	900	687	181	84	38	16	–	–	–
Baldcypress	12,343	2,621	2,149	2,414	1,639	1,391	750	580	324	452	23
Pondcypress	4,149	1,090	903	894	696	222	182	43	63	50	6
Cedars	22,289	12,942	4,770	2,636	1,130	503	136	93	57	22	–
Total softwoods	1,123,394	474,739	293,044	170,530	91,063	49,673	24,382	11,231	4,768	3,682	282
Hardwood:											
Select white oaks[1]	130,843	50,070	28,082	20,142	13,315	8,105	5,202	2,700	1,506	1,538	183
Select red oaks[2]	40,566	12,010	8,388	6,610	4,354	2,771	2,304	1,373	1,134	1,405	217
Chestnut oak	65,336	22,690	14,131	10,598	6,334	4,832	3,035	1,322	991	1,256	147
Other white oaks	32,905	12,132	8,212	5,932	3,044	1,779	898	445	141	280	42
Other red oaks	194,280	76,004	45,762	29,056	18,637	10,985	6,355	3,686	1,669	1,900	226
Hickory	69,551	25,373	15,986	10,734	6,938	5,077	2,576	1,610	644	595	18
Yellow birch	5,978	4,143	669	505	95	255	194	30	32	55	–
Hard maple	6,949	3,495	1,056	743	596	487	158	212	74	123	5
Soft maple	128,707	58,184	30,374	18,042	10,545	5,693	2,758	1,537	846	696	32
Beech	16,616	6,542	2,681	2,147	1,858	1,577	706	539	167	373	26
Sweetgum	153,967	67,255	38,477	21,092	12,130	6,826	4,315	2,115	922	793	42
Tupelo and blackgum	120,477	37,340	29,428	19,448	13,767	9,404	5,188	3,147	1,409	1,281	65
Ash	28,388	11,300	7,281	3,948	2,432	1,485	992	583	179	183	5
Cottonwood	1,375	457	211	250	147	174	53	29	34	20	–
Basswood	4,790	1,171	1,262	684	841	350	322	83	49	22	6
Yellow-popular	151,876	50,300	34,694	24,458	17,772	11,775	6,256	3,355	1,620	1,595	51
Bay and magnolia	7,244	2,969	1,732	1,135	554	545	166	74	35	29	5
Black cherry	5,833	2,939	1,322	767	322	314	64	65	28	12	–
Black walnut	2,574	661	679	503	447	191	36	38	8	11	–
Sycamore	3,761	771	1,063	674	530	183	174	95	102	152	17
Black locust	17,423	5,136	4,392	3,649	2,410	1,086	345	249	69	84	3
Elm	18,242	6,578	5,607	2,727	1,553	841	521	209	87	112	7
Other eastern hardwoods	54,707	25,323	14,489	6,926	3,439	2,000	1,123	718	357	320	12
Total hardwoods	1,262,388	482,843	295,978	190,770	122,060	76,735	43,741	24,214	12,103	12,835	1,109
All species	2,385,782	957,582	589,022	361,300	213,123	126,408	68,123	35,445	16,871	16,517	1,391

[1] Includes white and swamp chestnut oaks.
[2] Includes cherrybark and northern red oaks.

Table 11. — Volume of timber on commercial forest land, by class of timber and by softwood and hardwood, North Carolina, 1974

Class of timber	All species	Softwood	Hardwood
	Thousand cubic feet		
Sawtimber trees:			
Saw-log portion	14,175,548	6,541,514	7,634,034
Upper-stem portion	2,138,827	740,462	1,398,365
Total	16,314,375	7,281,976	9,032,399
Poletimber trees	8,493,246	3,101,838	5,391,408
All growing-stock trees	24,807,621	10,383,814	14,423,807
Rough trees:			
Sawtimber-size trees	721,522	62,774	658,748
Poletimber-size trees	1,468,531	88,592	1,379,939
Total	2,190,053	151,366	2,038,687
Rotten trees:			
Sawtimber-size trees	555,431	37,296	518,135
Poletimber-size trees	94,643	1,200	93,443
Total	650,074	38,496	611,578
Salvable dead trees:			
Sawtimber-size trees	15,047	12,696	2,351
Poletimber-size trees	20,636	18,914	1,722
Total	35,683	31,610	4,073
Total, all timber	27,683,431	10,605,286	17,078,145

Table 12. — Volume of growing stock and sawtimber on commercial forest land, by ownership classes, and by softwood and hardwood, North Carolina, 1974

Ownership class	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet			*Thousand board feet*[1]		
National Forest	1,637,422	446,319	1,191,103	5,194,383	1,651,663	3,542,720
Other public	674,899	364,111	310,788	1,976,370	1,143,422	832,948
Forest industry	2,184,576	1,042,168	1,142,408	6,184,675	3,172,162	3,012,513
Farmer and misc. private	20,310,724	8,531,216	11,779,508	59,514,585	27,716,712	31,797,873
All ownerships	24,807,621	10,383,814	14,423,807	72,870,013	33,683,959	39,186,054

[1] International ¼-inch rule

Table 13. — Volume of growing stock on commercial forest land, by species and diameter classes, North Carolina, 1974

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand cubic feet										
Softwood:											
Longleaf pine	451,275	40,811	82,713	97,346	102,570	68,262	34,870	17,225	3,826	3,652	
Slash pine	19,602	11,919	6,814	621			248				
Shortleaf pine	1,586,169	229,811	385,839	421,104	278,733	157,737	63,467	30,066	12,370	7,042	
Loblolly pine	4,993,564	461,914	683,604	785,068	853,423	784,998	618,068	392,123	203,896	198,835	11,635
Pond pine	980,850	141,890	194,756	236,097	163,955	118,939	69,025	31,750	17,773	6,665	
Virginia pine	1,100,523	260,019	328,006	276,242	142,891	61,615	21,694	7,511	2,545		
Pitch pine	187,377	21,287	37,136	44,162	32,077	21,129	17,864	7,134	5,387	1,201	
Table-Mountain pine	23,165	4,132	4,799	1,888	5,860	3,406	2,064			1,016	
Spruce pine											
Sand pine											
Eastern white pine	421,945	23,749	51,993	52,074	49,807	53,876	50,434	43,922	22,753	55,349	17,988
Eastern hemlock	151,453	12,641	9,088	14,936	8,486	22,561	13,992	7,120	18,874	26,717	17,038
Spruce and fir	19,452	1,194	5,118	7,250	2,539	1,649	1,206	496			
Baldcypress	251,260	9,235	18,380	33,557	32,248	37,172	28,208	29,030	20,593	39,284	3,553
Pondcypress	56,211	3,754	6,987	10,901	11,481	5,985	6,149	1,936	3,538	3,805	1,675
Cedars	140,968	34,693	29,556	31,328	19,445	12,652	4,589	4,049	3,072	1,584	
Total softwoods	10,383,814	1,257,049	1,844,789	2,012,574	1,703,515	1,349,981	931,878	572,362	314,627	345,150	51,889
Hardwood:											
Select white oaks[1]	1,556,551	137,217	168,184	227,403	242,228	213,079	187,007	125,895	90,749	132,616	32,173
Select red oaks[2]	696,446	38,968	55,126	77,221	76,600	71,590	81,501	67,041	65,781	123,368	39,250
Chestnut oak	807,854	58,038	81,703	115,272	107,837	123,180	100,685	56,258	49,774	94,472	20,635
Other white oaks	324,373	32,538	46,098	58,393	50,572	42,870	29,709	20,541	7,368	26,467	9,817
Other red oaks	2,079,830	212,091	272,479	314,067	316,784	275,067	221,976	170,307	96,763	160,998	39,298
Hickory	820,396	67,208	95,781	115,258	126,083	135,771	99,623	79,602	41,040	55,055	4,975
Yellow birch	42,902	12,346	4,104	4,063	1,321	5,569	6,282	1,287	2,319	5,611	
Hard maple	87,157	11,315	6,524	8,415	11,659	14,086	7,089	11,161	4,811	11,088	1,009
Soft maple	1,178,162	182,547	197,316	207,128	183,630	142,835	91,786	66,877	46,976	54,979	4,088
Beech	243,087	21,606	17,371	26,302	34,801	42,083	26,464	25,668	9,625	34,840	4,327
Sweetgum	1,526,304	164,321	240,962	256,253	242,427	196,836	171,586	111,172	59,698	74,575	8,474
Tupelo and blackgum	1,591,999	113,042	194,836	235,214	253,377	250,020	188,897	149,657	83,095	109,015	14,846
Ash	309,117	32,736	46,756	46,121	47,395	43,545	37,933	28,434	10,775	14,590	832
Cottonwood	21,797	1,318	1,430	3,258	3,391	4,943	1,904	1,737	2,264	1,552	
Basswood	71,305	2,564	7,992	9,199	18,191	10,490	12,501	4,373	2,987	2,155	853
Yellow-popular	2,011,048	154,676	226,295	290,528	353,444	331,553	238,712	163,539	102,889	142,337	7,075
Bay and magnolia	71,372	8,649	10,910	12,627	9,883	14,255	6,882	3,141	2,086	2,229	710
Black cherry	47,698	9,018	8,578	7,987	6,167	7,720	2,488	3,358	1,574	808	
Black walnut	27,421	1,989	3,754	5,285	7,308	4,954	1,231	1,663	490	747	
Sycamore	66,998	2,981	7,388	8,631	10,460	4,995	6,316	4,725	5,514	13,606	2,382
Black locust	176,639	15,265	25,397	36,051	39,644	25,899	12,327	10,673	4,293	6,603	487
Elm	182,332	16,735	33,743	32,222	28,399	22,286	19,448	11,322	5,599	10,300	2,278
Other eastern hardwoods	483,019	70,638	90,871	83,106	63,841	53,083	38,097	33,815	20,571	25,949	3,048
Total hardwoods	14,423,807	1,367,806	1,843,598	2,180,004	2,235,442	2,036,709	1,590,444	1,152,246	717,041	1,103,960	196,557
All species	24,807,621	2,624,855	3,688,387	4,192,578	3,938,957	3,386,690	2,522,322	1,724,608	1,031,668	1,449,110	248,446

[1] Includes white and swamp chestnut oaks.
[2] Includes cherrybark and northern red oaks.

Table 14. — Volume of sawtimber on commercial forest land, by species and diameter classes, North Carolina, 1974

Species	All classes	Diameter Class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-29.9	29.0 and larger
	Thousand board feet								
Softwood:									
Longleaf pine	1,606,814	393,762	494,361	365,088	200,550	104,645	24,003	24,405	–
Slash pine	3,450	2,087			1,363				–
Shortleaf pine	4,161,782	1,509,182	1,228,717	785,377	345,222	174,042	74,993	44,249	–
Loblolly Pine	18,774,018	2,753,969	3,747,753	3,936,251	3,395,409	2,299,680	1,256,889	1,300,708	83,359
Pond pine	2,481,720	719,654	615,406	512,949	337,003	166,086	90,438	40,184	–
Virginia pine	1,948,631	935,469	577,688	277,333	105,910	38,534	13,697		–
Pitch pine	557,339	139,803	133,716	102,896	97,727	41,788	33,576	7,833	–
Table-Mountain pine	70,451	6,861	27,880	17,488	11,822			6,400	–
Spruce pine	–	–	–	–	–	–	–	–	–
Sand pine	–	–	–	–	–	–	–	–	–
Eastern white pine	1,761,520	188,001	215,906	261,464	263,848	242,511	130,607	341,918	117,265
Eastern hemlock	688,869	50,062	35,507	106,649	71,804	38,896	106,731	164,574	114,646
Spruce and fir	53,972	25,392	11,043	8,055	6,627	2,855			–
Baldcypress	1,025,271	97,999	120,228	160,214	134,903	149,310	111,653	228,231	22,733
Pondcypress	199,359	34,994	44,888	26,613	30,427	10,098	19,355	21,854	11,130
Cedars	350,763	121,615	88,445	64,253	24,985	23,377	18,226	9,862	–
Total softwoods	33,683,959	6,978,850	7,341,538	6,624,630	5,027,600	3,291,822	1,880,168	2,190,218	349,133
Hardwood:									
Select white oaks[1]	4,384,975	–	788,686	822,875	807,959	589,244	455,424	720,311	200,476
Select red oaks[2]	2,275,779	–	245,605	265,735	333,336	294,809	302,945	614,627	218,722
Chestnut oak	2,306,079	–	339,641	461,254	416,302	251,545	235,623	485,077	116,637
Other white oaks	1,152,946	–	273,479	266,489	179,279	142,498	47,785	176,981	66,435
Other red oaks	5,601,720	–	1,071,630	1,100,015	983,746	821,685	493,630	888,664	242,350
Hickory	2,373,494	–	427,832	548,148	452,265	389,862	213,655	310,135	31,597
Yellow birch	92,167	–	4,951	21,745	25,406	5,359	9,903	24,803	–
Hard maple	264,006	–	43,353	56,696	30,598	50,513	22,637	54,881	5,328
Soft maple	2,268,670	–	564,974	521,836	372,546	293,508	218,099	275,383	22,324
Beech	655,954	–	121,554	152,447	96,483	95,782	37,504	134,130	18,054
Sweetgum	3,935,213	–	853,161	836,086	823,511	582,482	332,207	450,520	57,246
Tupelo and blackgum	4,524,389	–	820,445	988,021	843,549	731,690	430,536	613,669	96,479
Ash	747,722	–	152,510	167,696	161,580	131,229	52,748	77,031	4,928
Cottonwood	73,656	–	12,633	21,035	9,034	9,233	12,545	9,176	–
Basswood	207,244	–	62,404	41,334	53,429	19,695	14,373	11,386	4,623
Yellow-poplar	6,059,593	–	1,231,497	1,388,379	1,132,535	844,516	566,816	849,274	46,576
Bay and magnolia	181,876	–	32,681	61,217	36,707	17,302	12,790	15,505	5,674
Black cherry	89,298	–	21,843	29,451	10,742	15,615	7,606	4,041	–
Black walnut	56,507	–	24,751	16,982	4,437	5,938	1,788	2,611	–
Sycamore	219,590	–	33,157	18,881	27,585	22,344	27,710	75,589	14,324
Black locust	363,826	–	139,245	93,970	45,794	40,409	16,527	25,917	1,964
Elm	407,115	–	96,092	85,633	82,332	51,432	26,658	52,090	12,878
Other eastern hardwoods	944,235	–	214,130	197,966	154,475	145,248	92,238	123,702	16,476
Total hardwoods	39,186,054	–	7,576,254	8,163,891	7,083,630	5,551,938	3,631,747	5,995,503	1,183,091
All species	72,870,013	6,978,850	14,917,792	14,788,521	12,111,230	8,843,760	5,511,915	8,185,721	1,532,224

[1] Includes white and swamp chestnut oaks.
[2] Includes cherrybark and northern red oaks.

Table 15. — Volume of sawtimber on commercial forest land, by species and quality classes, North Carolina, 1974

Species	All grades	Log grade			
		1	2	3	4
	Thousand board feet				
Softwood:					
Yellow pines[1]	29,604,205	10,659,352	3,145,766	15,799,087	([2])
Eastern white pine[3]	1,761,520	50,123	31,839	1,130,704	548,854
Cypress[3]	1,224,630	316,249	605,075	303,306	
Spruce and fir[3]	53,972	2,956	7,344	39,115	4,557
Other eastern softwoods[1]	1,039,632	150,347	195,913	522,508	170,864
Total	33,683,959	11,179,027	3,985,937	17,794,720	724,275
Hardwood:[4]					
Select white and red oaks	6,660,754	1,564,592	1,636,592	2,890,973	568,597
Other white and red oaks	9,060,745	1,236,588	2,155,954	3,905,867	1,762,336
Hickory	2,373,494	284,129	548,164	1,062,476	478,725
Yellow birch	92,167	12,513	26,492	40,699	12,463
Hard maple	264,006	35,725	78,590	98,995	50,696
Sweetgum	3,935,213	819,710	856,692	2,017,853	240,958
Ash, walnut, and black cherry	893,527	171,562	241,440	433,094	47,431
Yellow-poplar	6,059,593	1,110,467	1,486,503	2,658,097	804,526
Other hardwoods	9,846,555	1,052,166	2,409,740	5,016,895	1,367,754
Total	39,186,054	6,287,452	9,440,167	18,124,949	5,333,486
All species	72,870,013	17,466,479	13,426,104	35,919,669	6,057,761

[1] Based on *Southern Pine Log Grades for Yard and Structural Lumber*, Research Paper SE-39, published by the Southeastern Forest Experiment Station in 1968.

[2] Not applicable.

[3] Based on *Trial Log Grades for Eastern White Pine* prepared by the Northeastern Forest Experiment Station in 1960.

[4] Graded according to *Hardwood Log Grades for Standard Lumber* published by the U. S. Forest Products Laboratory in 1953. Specifications for the grade 4 tie and timber logs are based chiefly on knot size and log soundness.

Table 16. — Net annual growth and removals of growing stock on commercial forest land, by species, North Carolina, 1973

Species	Net annual growth	Annual timber removals
	Thousand cubic feet	
Softwood:		
Yellow pines	489,904	413,689
Eastern white pine	24,723	10,707
Spruce and fir	537	
Cypress	7,815	7,292
Other eastern softwoods	12,587	5,030
Total softwoods	535,566	436,718
Hardwood:		
Select white and red oaks	89,544	58,774
Other white and red oaks	125,229	69,693
Hickory	23,988	12,968
Yellow birch	1,776	766
Hard maple	5,214	
Sweetgum	62,135	44,046
Ash, walnut, and black cherry	16,135	8,478
Yellow-poplar	133,882	39,885
Tupelo and blackgum	29,154	38,906
Bay and magnolia	1,953	1,579
Other eastern hardwoods	99,864	38,741
Total hardwoods	588,874	313,836
All species	1,124,440	750,554

Table 17. — Net annual growth and removals of growing stock on commercial forest land, by ownership classes and by softwood and hardwood, North Carolina, 1973

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet					
National Forest	58,230	17,853	40,377	14,130	7,838	6,292
Other public	30,294	17,669	12,625	25,966	18,134	7,832
Forest industry	100,999	60,657	40,342	132,435	93,405	39,030
Farmer and misc. private	934,917	439,387	495,530	578,023	317,341	260,682
All ownerships	1,124,440	535,566	588,874	750,554	436,718	313,836

Table 18. — Net annual growth and removals of sawtimber on commercial forest land, by species, North Carolina, 1973

Species	Net annual growth	Annual timber removals
	Thousand board feet	
Softwood:		
Yellow pines	1,849,362	1,593,003
Eastern white pine	104,743	46,291
Spruce and fir	2,421	
Cypress	44,686	34,488
Other eastern softwoods	39,465	11,651
Total softwoods	2,040,677	1,685,433
Hardwood:		
Select white and red oaks	322,113	190,435
Other white and red oaks	413,338	232,514
Hickory	82,078	40,370
Yellow birch	1,525	3,382
Hard maple	12,498	
Sweetgum	188,808	150,367
Ash, walnut, and black cherry	43,042	25,396
Yellow-poplar	508,337	150,688
Tupelo and blackgum	109,676	146,133
Bay and magnolia	5,528	414
Other eastern hardwoods	241,196	105,246
Total hardwoods	1,928,139	1,044,945
All species	3,968,816	2,730,378

Table 19. — Net annual growth and removals of sawtimber on commercial forest land, by ownership classes, and by softwood and hardwood, North Carolina, 1973

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand board feet					
National Forest	222,666	80,358	142,308	54,436	32,185	22,251
Other public	112,036	74,660	37,376	90,647	67,105	23,542
Forest industry	310,600	185,512	125,088	513,323	384,818	128,505
Farmer and misc. private	3,323,514	1,700,147	1,623,367	2,071,972	1,201,325	870,647
All ownerships	3,968,816	2,040,677	1,928,139	2,730,378	1,685,433	1,044,945

Table 20. — Mortality of growing stock and sawtimber on commercial forest land, by species, North Carolina, 1973

Species	Growing stock	Sawtimber
	Thousand cu ft	*Thousand bd. ft.*
Softwood:		
Yellow pines	73,824	134,275
Eastern white pine	1,515	4,915
Spruce and fir	204	
Cypress	667	1,759
Other eastern softwoods	857	1,902
Total softwoods	77,067	142,851
Hardwood:		
Select white and red oaks	5,684	21,203
Other white and red oaks	16,954	44,221
Hickory	4,455	17,417
Yellow birch		
Hard maple		
Sweetgum	6,691	23,788
Yellow-poplar	3,838	12,557
Tupelo and blackgum	4,858	14,427
Bay and magnolia	153	248
Other eastern hardwoods	16,335	33,431
Total hardwoods	63,396	174,275
All species	140,463	317,126

Table 21. — Mortality of growing stock and sawtimber on commercial forest land, by ownership classes, and by softwood and hardwood, North Carolina, 1973

Ownership class	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet			*Thousand board feet*		
National Forest	11,224	2,232	8,992	34,527	5,677	28,850
Other public	4,078	2,221	1,857	11,656	4,469	7,187
Forest industry	13,745	7,910	5,835	35,837	17,055	18,782
Farmer and misc. private	111,416	64,704	46,712	235,106	115,650	119,456
All ownerships	140,463	77,067	63,396	317,126	142,851	174,275

Table 22. — Mortality of growing stock and sawtimber on commercial forest land, by causes and by softwood and hardwood, North Carolina, 1973

Cause of death	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet			*Thousand board feet*		
Fire	3,733	2,573	1,160	5,377	3,441	1,936
Insects	27,464	27,397	67	74,301	74,039	262
Disease	9,532	5,197	4,335	15,307	12,168	3,139
Weather	29,242	13,051	16,191	85,783	23,258	62,525
Suppression	27,693	19,318	8,375	12,994	9,044	3,950
Animals	173	–	173	694		694
Undetermined	42,626	9,531	33,095	122,670	20,901	101,769
All causes	140,463	77,067	63,396	317,126	142,851	174,275

Table 23. — Output of timber products, by product, by source of material, and by softwood and hardwood, North Carolina, 1973

Product and species group	Standard units	Total output		Roundwood products		Plant byproducts	
		Number of units	Thousand cu. ft.	Number of units	Thousand cu. ft.	Number of units	Thousand cu. ft.
Saw logs:							
Softwood	M bd. ft.[1]	1,065,765	182,201	1,041,911	178,126	23,854	4,075
Hardwood	M bd. ft.[1]	534,225	90,240	532,447	89,940	1,778	300
Total	M bd. ft.[1]	1,599,990	272,441	1,574,358	268,066	25,632	4,375
Veneer logs and bolts:							
Softwood	M bd. ft.[1]	300,093	49,799	300,093	49,799	—	—
Hardwood	M bd. ft.[1]	106,413	17,629	106,413	17,629	—	—
Total	M bd. ft.[1]	406,506	67,428	406,506	67,428	—	—
Pulpwood:[2]							
Softwood	Std. cords[3]	2,798,162	214,576	2,028,548	155,547	769,614	59,029
Hardwood	Std. cords[3]	1,434,432	109,543	1,247,319	95,248	187,113	14,295
Total	Std. cords[3]	4,232,594	324,119	3,275,867	250,795	956,727	73,324
Cooperage logs and bolts:							
Softwood	M bd. ft.[1]	–	–	–	–	–	–
Hardwood	M bd. ft.[1]	1,011	157	1,011	157	—	—
Total	M bd. ft.[1]	1,011	157	1,011	157	—	—
Poles and piling:							
Softwood	M pieces	84	1,033	84	1,033	—	—
Hardwood	M pieces	–	–	—	–	—	—
Total	M pieces	84	1,033	84	1,033	—	—
Posts (round and split):							
Softwood	M pieces	2,393	3,180	435	145	1,958	3,035
Hardwood	M pieces	22	14	22	14	–	—
Total	M pieces	2,415	3,194	457	159	1,958	3,035
Other:[4]							
Softwood	M cu. ft.	10,690	10,690	721	721	9,969	9,969
Hardwood	M cu. ft.	5,930	5,930	2,320	2,320	3,610	3,610
Total	M cu. ft.	16,620	16,620	3,041	3,041	13,579	13,579
Total industrial products:							
Softwood		—	461,479	—	385,371	—	76,108
Hardwood		—	223,513	—	105,308	—	18,205
Total		—	684,992	—	590,679	—	94,313
Fuelwood:[5]							
Softwood	Std. cords	148,058	11,356	119,570	9,171	28,488	2,185
Hardwood	Std. cords	284,607	21,744	262,500	20,055	22,107	1,689
Total	Std. cords	432,665	33,100	382,070	29,226	50,595	3,874
All products:[6]							
Softwood		—	472,835	—	394,542	—	78,293
Hardwood		—	245,257	—	225,363	—	19,894
Total		—	718,092	—	619,905	—	98,187

[1] International ¼-inch rule.
[2] Roundwood figures include 193,821 cords of roundwood chipped at other primary wood-using plants.
[3] Rough-wood basis (includes chips converted to equivalent standard cords).
[4] Includes particleboard, handle stock, and various specialty products.
[5] Excludes approximately 18,099 thousand cubic feet of plant byproducts used for industrial fuel.
[6] Excludes approximately 6,393 thousand cubic feet of plant byproducts used for litter and mulch.

Table 24. — Output of roundwood products, by product, by source, and by softwood and hardwood, North Carolina, 1973

Product and species group	All sources	Growing stock trees[1]			Cull trees[1]	Salvable dead trees[1]	Other sources[2]
		Total	Sawtimber	Poletimber			
	Thousand cubic feet						
Saw logs:							
Softwood	178,126	172,465	166,951	5,514	1,760	—	3,901
Hardwood	89,940	85,694	81,032	4,662	3,680	—	566
Total	268,066	258,159	247,983	10,176	5,440	—	4,467
Veneer logs and bolts:							
Softwood	49,799	47,082	47,082		—		2,717
Hardwood	17,629	16,681	16,515	166	820		128
Total	67,428	63,763	63,597	166	820	—	2,845
Pulpwood:							
Softwood	155,547	143,251	94,395	48,856	3,549	786	7,961
Hardwood	95,248	83,062	38,480	44,582	10,465	—	1,721
Total	250,795	226,313	132,875	93,438	14,014	786	9,682
Cooperage logs and bolts:							
Softwood	—	—	—	—	—	—	—
Hardwood	157	157	157	—	—	—	—
Total	157	157	157	—	—	—	—
Poles and piling:							
Softwood	1,033	1,033	1,033	—	—	—	—
Hardwood	—	—	—	—	—	—	—
Total	1,033	1,033	1,033	—	—	—	—
Posts (round and split):							
Softwood	145	46	—	46	—	—	99
Hardwood	14	13	9	4	—	—	1
Total	159	59	9	50	—	—	100
Other:							
Softwood	721	635	97	538	—	—	86
Hardwood	2,320	2,152	1,264	888	164	—	4
Total	3,041	2,787	1,361	1,426	164	—	90
Total industrial products:							
Softwood	385,371	364,512	308,558	54,954	5,309	786	14,764
Hardwood	205,308	187,759	137,457	50,302	15,129	—	2,420
Total	590,679	552,271	447,015	105,256	20,438	786	17,184
Fuelwood:							
Softwood	9,171	4,772	2,402	2,370	181	1,571	2,647
Hardwood	20,055	16,836	8,724	8,112	1,320	—	1,899
Total	29,226	21,608	11,126	10,482	1,501	1,571	4,546
All products:							
Softwood	394,542	369,284	311,960	57,324	5,490	2,357	17,411
Hardwood	225,363	204,595	146,181	58,114	16,449	—	4,319
Total	619,905	573,879	458,141	115,738	21,939	2,357	21,730

[1] On commercial forest land.

[2] Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas, or material from noncommercial forest land or nonforest land such as fence rows or suburban areas.

Table 25. — Annual timber removals from growing stock on commercial forest land, by items, and by softwood and hardwood, North Carolina, 1973

Item	All species	Softwood	Hardwood
	Thousand cubic feet		
Roundwood products:			
Saw logs	258,159	172,465	85,694
Veneer logs and bolts	63,763	47,082	16,681
Pulpwood	226,313	143,251	83,062
Cooperage logs and bolts	157		157
Poles and piling	1,033	1,033	
Posts	59	46	13
Other	2,787	635	2,152
Fuelwood	21,608	4,772	16,836
All products	573,879	369,284	204,595
Logging residues	68,115	23,985	44,130
Other removals	108,560	43,449	65,111
Total removals	750,554	436,718	313,836

Table 26. — Annual timber removals from live sawtimber on commercial forest land, by items, and by softwood and hardwood, North Carolina, 1973

Item	All species	Softwood	Hardwood
	Thousand board feet		
Roundwood products:			
Saw logs	1,456,546	906,476	550,070
Veneer logs and bolts	375,169	261,146	114,023
Pulpwood	499,998	372,276	127,722
Cooperage logs and bolts	1,125	—	1,125
Poles and piling	5,004	5,004	—
Posts	50	—	50
Other	8,861	553	8,308
Fuelwood	38,430	9,473	28,957
All products	2,385,183	1,554,928	830,255
Logging residues	84,784	23,984	60,800
Other removals	260,411	106,521	153,890
Total removals	2,730,378	1,685,433	1,044,945

Table 27. — Volume of unused residues at primary manufacturing plants, by industry and type of residue, and by softwood and hardwood, North Carolina, 1973

Species group and type of residues	All industries	Lumber	Veneer and plywood	Other
	Thousand cubic feet			
Softwoods:				
Coarse[1]	3,514	3,428	70	16
Fine[2]	14,849	14,771	78	
Total	18,363	18,199	148	16
Hardwoods:				
Coarse[1]	3,088	2,345	732	11
Fine[2]	8,776	8,276	496	4
Total	11,864	10,621	1,228	15
All species:				
Coarse[1]	6,602	5,773	802	27
Fine[2]	23,625	23,047	574	4
Total	30,227	28,820	1,376	31

[1] Material such as slabs, edgings, and veneer cores.
[2] Material such as sawdust and shavings.

Table 28. — Projection of net annual growth, available cut, and inventory of sawtimber and growing stock on commercial forest land, by softwood and hardwood, North Carolina, 1973 to 2003

Species group	1973	Projected to:		
		1983	1993	2003
	GROWING STOCK (In thousand cubic feet)			
Softwood:				
Cut	436,718	484,400	517,400	535,500
Growth	535,566	548,900	549,100	535,500
Inventory[2]	10,383,814	10,961,400	11,190,900	11,091,700
Hardwood:				
Cut	313,836	460,500	579,400	665,900
Growth	588,874	640,100	667,400	665,900
Inventory[2]	14,423,807	16,328,100	17,262,800	17,283,100
Total:				
Cut	750,554	944,900	1,096,800	1,201,400
Growth	1,124,440	1,189,000	1,216,500	1,201,400
Inventory[2]	24,807,621	27,289,500	28,453,700	28,374,800
	SAWTIMBER (In thousand board feet)			
Softwood:				
Cut	1,685,433	1,907,200	2,094,600	2,287,400
Growth	2,040,677	2,276,400	2,315,200	2,287,400
Inventory[2]	33,683,959	37,295,800	39,360,200	39,913,100
Hardwood:				
Cut	1,044,945	1,553,500	1,989,100	2,334,300
Growth	1,928,139	2,180,400	2,325,700	2,334,300
Inventory[2]	39,186,054	45,763,800	49,452,400	50,054,700
Total:				
Cut	2,730,378	3,460,700	4,083,700	4,621,700
Growth	3,968,816	4,456,800	4,640,900	4,621,700
Inventory[2]	72,870,013	83,059,600	88,812,600	89,967,800

[1] Assumptions:
1. Area of commercial forest land will decline at the rate of 40,000 acres each year.
2. Forestry progress will continue at the rate indicated by recent trends
3. Cut starting at the 1973 level will gradually increase and come into balance with growth by year 2003.

[2] Inventory as of January 1 of the following year.

Table 29. — Basal area per acre of growing stock and rough and rotten trees 5.0 inches d.b.h. and larger, by forest type and Survey Unit, North Carolina, 1974

Forest type	State	Southern Coastal Plain	Northern Coastal Plain	Piedmont	Mountain
	Square feet				
White pine-hemlock:					
Growing stock	80.4			37.5	82.9
Rough and rotten trees	9.0				9.5
All trees	89.4			37.5	92.4
Spruce-fir:					
Growing stock	48.8				48.8
Rough and rotten trees	13.2				13.2
All trees	62.0	—			62.0
Longleaf-slash pine:					
Growing stock	38.5	36.9	55.5		
Rough and rotten trees	1.6	1.5	1.9		
All trees	40.1	38.4	57.4		
Loblolly-shortleaf pine:					
Growing stock	54.7	42.8	58.0	66.7	68.3
Rough and rotten trees	4.0	4.1	3.9	3.5	6.4
All trees	58.7	46.9	61.9	70.2	74.7
Oak-pine:					
Growing stock	53.0	49.1	50.8	58.2	61.6
Rough and rotten trees	7.9	9.0	7.2	7.0	9.2
All trees	60.9	58.1	58.0	65.2	70.8
Oak-hickory:					
Growing stock	54.2	37.6	54.0	55.3	63.2
Rough and rotten trees	12.4	11.4	10.8	11.0	15.9
All trees	66.6	49.0	64.8	66.3	79.1
Oak-gum-cypress:					
Growing stock	70.0	62.7	76.7	61.5	
Rough and rotten trees	25.0	24.0	26.7	15.9	
All trees	95.0	86.7	103.4	77.4	
Elm-ash-cottonwood:					
Growing stock	59.2	57.6	64.1	57.9	28.1
Rough and rotten trees	22.2	30.2	20.6	19.0	
All trees	81.4	87.8	84.7	76.9	28.1
Maple-beech-birch:					
Growing stock	77.2				77.2
Rough and rotten trees	23.0	—			23.0
All trees	100.2		—		100.2
All types:					
Growing stock	56.4	46.4	61.1	59.9	64.8
Rough and rotten trees	10.7	10.0	11.7	8.3	14.7
All trees	67.1	56.4	72.8	68.2	79.5

Table 30. — Number of growing-stock and rough and rotten trees 1.0-4.9 inches d.b.h. per acre, by forest type and Survey Unit, North Carolina, 1974

Forest type	State	Southern Coastal Plain	Northern Coastal Plain	Piedmont	Mountain
	Number of trees				
White pine-hemlock:					
Growing stock	378			1,599	306
Rough and rotten trees	194			200	194
All trees	572	—	—	1,799	500
Spruce-fir:					
Growing stock	901				901
Rough and rotten trees	100				100
All trees	1,001		—	—	1,001
Longleaf-slash pine:					
Growing stock	188	186	214		
Rough and rotten trees	208	221	64		
All trees	396	407	278		
Loblolly-shortleaf pine:					
Growing stock	408	325	403	540	391
Rough and rotten trees	338	329	394	267	400
All trees	746	654	797	807	791
Oak-pine:					
Growing stock	343	238	415	391	294
Rough and rotten trees	516	567	549	436	439
All trees	859	805	964	827	733
Oak-hickory:					
Growing stock	215	173	247	233	198
Rough and rotten trees	431	532	448	443	343
All trees	646	705	695	676	541
Oak-gum-cypress:					
Growing stock	223	199	247	173	—
Rough and rotten trees	556	573	568	303	—
All trees	779	772	815	476	—
Elm-ash-cottonwood:					
Growing stock	131	104	110	162	—
Rough and rotten trees	371	386	403	338	600
All trees	502	490	513	500	600
Maple-beech-birch:					
Growing stock	172			—	172
Rough and rotten trees	163				163
All trees	335	—		—	335
All types:					
Growing stock	298	248	329	358	226
Rough and rotten trees	417	431	468	372	341
All trees	715	679	797	730	567

Table 31. — Area of commercial forest land, by stand volume (board feet) and ownership classes by physiographic classes, North Carolina, 1974

Ownership class and stand volume per acre[1] (Bd. ft.)	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sandhills	Other misc. classes
	Acres									
National Forest:										
Less than 1,500	220,773	—	—	—	127,330	9,901	67,827	9,323	—	6,392
1,500 to 5,000	396,379	—	—	—	345,875	10,244	11,777	28,483	—	—
More than 5,000	394,282	—	—	1,889	329,284	36,632	5,778	20,699	—	—
All classes	1,011,434	—	—	1,889	802,489	56,777	85,382	58,505	—	6,392
Other public:										
Less than 1,500	387,376	1,391	6,113	5,922	58,099	116,248	96,850	55,512	42,414	4,827
1,500 to 5,000	247,178	1,863	5,788	24,320	27,181	61,276	37,057	45,153	44,340	200
More than 5,000	99,462	—	—	25,328	19,509	17,840	5,180	24,477	—	7,128
All classes	734,016	3,254	11,901	55,570	104,789	195,364	139,087	125,142	86,754	12,155
Forest industry:										
Less than 1,500	1,265,690	32,154	11,670	27,709	44,085	733,418	241,757	157,467	17,430	
1,500 to 5,000	478,474	53,028	23,470	23,230	52,861	169,533	96,372	59,980		
More than 5,000	390,629	57,900	46,477	33,080	31,083	179,267	5,963	36,859	—	—
All classes	2,134,793	143,082	81,617	84,019	128,029	1,082,218	344,092	254,306	17,430	
Farmer and misc. private:										
Less than 1,500	5,562,406	60,600	82,391	241,061	469,576	1,344,789	451,838	2,745,734	142,563	23,854
1,500 to 5,000	5,498,971	60,960	124,762	462,554	1,116,266	1,138,358	237,814	2,270,166	52,141	35,950
More than 5,000	4,603,215	182,359	169,399	626,297	795,017	1,191,331	75,474	1,506,862	16,426	40,050
All classes	15,664,592	303,919	376,552	1,329,912	2,380,859	3,674,478	765,126	6,522,762	211,130	99,854
All ownerships:										
Less than 1,500	7,436,245	94,145	100,174	274,692	699,090	2,204,356	858,272	2,968,036	202,407	35,073
1,500 to 5,000	6,621,002	115,851	154,020	510,104	1,542,183	1,379,411	383,020	2,403,782	96,481	36,150
More than 5,000	5,487,588	240,259	215,876	686,594	1,174,893	1,425,070	92,395	1,588,897	16,426	47,177
All classes	19,544,835	450,255	470,070	1,471,390	3,416,166	5,008,837	1,333,687	6,960,715	315,314	118,400

[1] International ¼-inch rule.

Table 32. — Area of commercial forest land, by stand volume (cubic feet) and ownership classes, by physiographic classes, North Carolina, 1974

Ownership class and stand volume per acre[1] (Cu. ft.)	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sandhills	Other misc. classes
	Acres									
National Forest:										
Less than 500	184,523	—	—		105,445	5,723	57,640	9,323		6,392
500 to 1,000	115,525	—	—	—	101,707	8,012	2,233	3,573	—	—
More than 1,000	711,386	—	—	1,889	595,337	43,042	25,509	45,609		
All classes	1,011,434	—		1,889	802,489	56,777	85,382	58,505	—	6,392
Other public:										
Less than 500	329,401	1,391	325	4,826	35,148	103,340	78,684	56,029	44,831	4,827
500 to 1,000	163,897	—	5,788	12,937	22,575	32,335	34,521	30,544	25,197	—
More than 1,000	240,718	1,863	5,788	37,807	47,066	59,689	25,882	38,569	16,726	7,328
All classes	734,016	3,254	11,901	55,570	104,789	195,364	139,087	125,142	86,754	12,155
Forest industry:										
Less than 500	1,073,349	23,719	5,714	21,480	35,192	640,140	199,952	129,722	17,430	—
500 to 1,000	267,856	11,070	2,288	12,908	8,056	113,904	84,348	35,282		
More than 1,000	793,588	108,293	73,615	49,631	84,781	328,174	59,792	89,302	—	
All classes	2,134,793	143,082	81,617	84,019	128,029	1,082,218	344,092	254,306	17,430	
Farmer and misc. private:										
Less than 500	3,487,368	48,680	57,290	146,755	244,177	1,001,494	366,657	1,472,800	140,414	9,101
500 to 1,000	3,216,909	15,801	54,321	193,178	444,416	805,438	182,938	1,457,898	50,442	12,477
More than 1,000	8,960,315	239,438	264,941	989,979	1,692,266	1,867,546	215,531	3,592,064	20,274	78,276
All classes	15,664,592	303,919	376,552	1,329,912	2,380,859	3,674,478	765,126	6,522,762	211,130	99,854
All ownerships:										
Less than 500	5,074,641	73,790	63,329	173,061	419,962	1,750,697	702,933	1,667,874	202,675	20,320
500 to 1,000	3,764,187	26,871	62,397	219,023	576,754	959,689	304,040	1,527,297	75,639	12,477
More than 1,000	10,706,007	349,594	344,344	1,079,306	2,419,450	2,298,451	326,714	3,765,544	37,000	85,604
All classes	19,544,835	450,255	470,070	1,471,390	3,416,166	5,008,837	1,333,687	6,960,715	315,314	118,401

[1] Growing-stock volume.

Table 33. — Average net volume and growth per acre on commercial forest land, by physiographic class, tree class, and species group, North Carolina, 1974

Physiographic class and tree class	Net volume per acre						Net growth per acre					
	Softwood		Hardwood		Total		Softwood		Hardwood		Total	
	Cubic feet	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*
Deep swamps:												
Growing stock	473.7	1,934	1,772.9	5,372	2,246.6	7,306	12.7	75	43.2	155	55.9	230
Rough and rotten trees	19.2	—	448.4	—	467.6	—	0.4	—	7.2	—	7.6	—
Total	492.9	1,934	2,221.3	5,372	2,714.2	7,306	13.1	75	50.4	155	63.5	230
Broad stream margins:												
Growing stock	188.8	821	1,503.5	4,489	1,692.3	5,310	6.9	33	47.6	166	54.5	199
Rough and rotten trees	8.3	—	297.9	—	306.2	—	0.2	—	7.1	—	7.3	—
Total	197.1	821	1,801.4	4,489	1,998.5	5,310	7.1	33	54.7	166	61.8	199
Narrow stream margins:												
Growing stock	286.2	1,180	1,390.4	4,341	1,676.6	5,521	10.8	56	50.6	196	61.4	252
Rough and rotten trees	8.1	—	293.4	—	301.5	—	0.2	—	6.6	—	6.8	—
Total	294.3	1,180	1,683.8	4,341	1,978.1	5,521	11.0	56	57.2	196	68.2	252
Mountain tops and slopes:												
Growing stock	256.6	881	1,216.9	3,411	1,473.5	4,292	12.0	47	44.1	148	56.1	195
Rough and rotten trees	6.8	—	221.0	—	227.8	—	0.2	—	4.3	—	4.5	—
Total	263.4	881	1,437.9	3,411	1,701.3	4,292	12.2	47	48.4	148	60.6	195
Flatwoods and dry pocosins:												
Growing stock	731.8	2,743	380.4	907	1,112.2	3,650	37.1	155	17.2	48	54.3	203
Rough and rotten trees	7.1	—	75.8	—	82.9	—	0.4	—	2.1	—	2.5	—
Total	738.9	2,743	456.2	907	1,195.1	3,650	37.5	155	19.3	48	56.8	203
Bays and wet pocosins:												
Growing stock	537.9	1,389	157.7	305	695.6	1,694	21.7	75	6.7	14	28.4	89
Rough and rotten trees	37.8	—	53.1	—	90.9	—	1.1	—	1.3	—	2.4	—
Total	575.7	1,389	210.8	305	786.5	1,694	22.8	75	8.0	14	30.8	89
Rolling uplands:												
Growing stock	608.3	1,640	638.6	1,614	1,246.9	3,254	35.6	121	31.8	102	67.4	223
Rough and rotten trees	7.6	—	89.9	—	97.5	—	0.4	—	2.9	—	3.3	—
Total	615.9	1,640	728.5	1,614	1,344.4	3,254	36.0	121	34.7	102	70.7	223
Sandhills:												
Growing stock	371.4	1,408	7.7	4	379.1	1,412	18.7	81	0.8	—	19.5	81
Rough and rotten trees	5.3	—	55.7	—	61.0	—	0.3	—	1.7	—	2.0	—
Total	376.7	1,408	63.4	4	440.1	1,412	19.0	81	2.5	—	21.5	81
Other misc. classes:												
Growing stock	508.2	2,028	976.6	2,695	1,484.8	4,723	21.8	85	35.5	139	57.3	224
Rough and rotten trees	10.4	—	162.8	—	173.2	—	0.6	—	3.6	—	4.2	—
Total	518.6	2,028	1,139.4	2,695	1,658.0	4,723	22.4	85	39.1	139	61.5	224
All classes:												
Growing stock	531.3	1,723	738.0	2,005	1,269.3	3,728	27.4	104	30.1	99	57.5	203
Rough and rotten trees	9.7	—	135.6	—	145.3	—	0.4	—	3.3	—	3.7	—
Total	541.0	1,723	873.6	2,005	1,414.6	3,728	27.8	104	33.4	99	61.2	203

Table 34. — Land area, by class, major forest type, and survey completion date, North Carolina, 1955, 1964, and 1974

Land use class	Survey completion date			Change
	1955	1964[1]	1974	1964-1974
		Acres		
Forest land:				
Commercial forest land:				
Pine and oak-pine types	10,021,900	10,671,457	9,388,453	-1,283,004
Hardwood types	9,319,500	9,304,463	10,156,382	+ 851,919
Total	19,341,400	19,975,920	19,544,835	- 431,085
Noncommercial forest land:				
Productive-reserved	340,500	372,002	433,792	+ 61,790
Unproductive	393,800	48,767	46,230	- 2,537
Total	734,300	420,769	480,022	+ 59,253
Nonforest land:				
Cropland	8,288,000	7,072,817	6,402,053	- 670,764
Pasture and range	1,471,100	1,723,634	1,808,363	+ 84,729
Other	1,433,100	1,941,220	2,819,840	+ 878,620
Total	11,192,200	10,737,671	11,030,256	+ 292,585
All land[2]	31,267,900	31,134,360	31,055,113	- 79,247

[1] These figures differ slightly from reported figures because of revisions in the estimates of land area.

[2] Excludes all water areas.

Table 35. — Volume[1] of sawtimber, growing stock, and all live timber on commercial forest land, by species group, diameter class, and survey completion date, North Carolina, 1955, 1964, and 1974

Species group	Year	All classes	Diameter class (inches at breast height)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 and larger
		SAWTIMBER (In thousand board feet, International ¼-inch rule)									
Softwood	1955	26,622,734	—	—	5,690,595	6,375,986	5,020,081	3,621,056	2,388,628	1,378,808	2,147,580
	1964	29,124,671	—	—	6,047,009	6,746,960	5,743,238	4,205,777	2,836,959	1,457,430	2,087,298
	1974	33,683,959	—	—	6,978,850	7,341,538	6,624,630	5,027,600	3,291,822	1,880,168	2,539,351
Hardwood	1955	30,433,841	—	—	—	5,486,384	6,150,621	5,123,194	4,288,589	3,100,721	6,284,332
	1964	31,941,629	—	—	—	6,148,735	6,534,549	5,740,162	4,562,202	3,012,272	5,943,709
	1974	39,186,054	—	—	—	7,576,254	8,163,891	7,083,630	5,551,938	3,631,747	7,178,594
		GROWING STOCK (In thousand cubic feet)									
Softwood	1955	8,502,327	1,100,368	1,616,211	1,638,148	1,476,503	1,020,213	670,155	415,096	230,214	335,419
	1964	9,039,787	1,130,028	1,594,628	1,743,877	1,563,333	1,168,008	778,148	492,389	243,193	326,183
	1974	10,383,814	1,257,049	1,844,789	2,012,574	1,703,515	1,349,981	931,878	572,362	314,527	397,039
Hardwood	1955	11,033,385	961,547	1,438,029	1,707,977	1,618,730	1,532,613	1,147,643	887,540	610,385	1,128,921
	1964	11,848,741	1,162,342	1,555,785	1,791,308	1,814,761	1,629,007	1,286,811	944,301	593,531	1,070,895
	1974	14,423,807	1,367,806	1,843,598	2,180,004	2,235,442	2,036,709	1,590,444	1,152,246	717,041	1,300,517
		ALL LIVE TIMBER (In thousand cubic feet)									
Softwood	1955	8,658,190	1,139,360	1,654,405	1,667,076	1,490,810	1,026,942	675,286	416,898	235,195	352,218
	1964	9,207,277	1,172,162	1,634,315	1,776,132	1,578,868	1,175,832	784,127	494,400	248,398	343,043
	1974	10,573,676	1,302,863	1,888,767	2,049,097	1,720,364	1,359,678	939,304	574,832	322,246	416,525
Hardwood	1955	13,086,916	1,383,664	1,821,826	2,003,085	1,832,959	1,689,577	1,260,954	989,705	685,521	1,419,625
	1964	14,071,033	1,673,620	1,977,464	2,101,625	2,054,439	1,795,998	1,413,231	1,050,812	667,014	1,336,830
	1974	17,074,072	1,972,617	2,339,142	2,553,031	2,525,881	2,243,809	1,741,525	1,282,270	804,261	1,611,536

[1] To provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used in evious surveys.

Table 36. — Volume of all live timber, by species group and Survey Unit, North Carolina, 1955, 1964, and 1974

Species group and Survey Unit	1955	1964	Change 1955-1964	1974	Change 1964-1974
	Thousand cu. ft.	*Thousand cu. ft.*	*Percent*	*Thousand cu. ft.*	*Percent*
Softwood:					
Southern Coastal Plain	2,336,979	2,708,603	+15.9	3,055,308	+12.8
Northern Coastal Plain	2,594,699	2,878,228	+10.9	2,798,504	- 2.8
Piedmont	2,815,237	2,645,713	- 6.0	3,417,266	+29.2
Mountain	911,275	974,733	+ 7.0	1,302,598	+33.6
All units	8,658,190	9,207,277	+ 6.3	10,573,676	+14.8
Hardwood:					
Southern Coastal Plain	2,554,945	2,649,991	+ 3.7	2,958,037	+11.6
Northern Coastal Plain	3,232,568	3,460,829	+ 7.1	3,708,131	+ 7.1
Piedmont	3,655,947	3,899,538	+ 6.7	5,108,971	+31.0
Mountain	3,643,456	4,060,675	+11.5	5,298,933	+30.5
All units	13,086,916	14,071,033	+ 7.5	17,074,072	+21.3

Knight, Herbert A., and Joe P. McClure
1975. North Carolina's timber, 1974. USDA For. Serv. Resour. Bull. SE-33, 52 p. Southeast. For. Exp. Stn., Asheville, N. C.

The fourth Statewide evaluation of North Carolina's forests reveals a decline in forest acreage but increases in timber volumes. Between 1964 and 1974, inventory volume increased from 20.9 to 24.8 billion cubic feet, or by 19 percent. A 3-percent reduction in the volume of softwood in the Northern Coastal Plain was the most significant exception to the overall buildup in inventory. Statewide, hardwoods accounted for almost two-thirds of the volume increase and, for the first time, hardwood growth exceeded that of softwood. Heavy utilization of pine and failures to regenerate pine after harvests have reinforced the strong successional drift toward hardwood.

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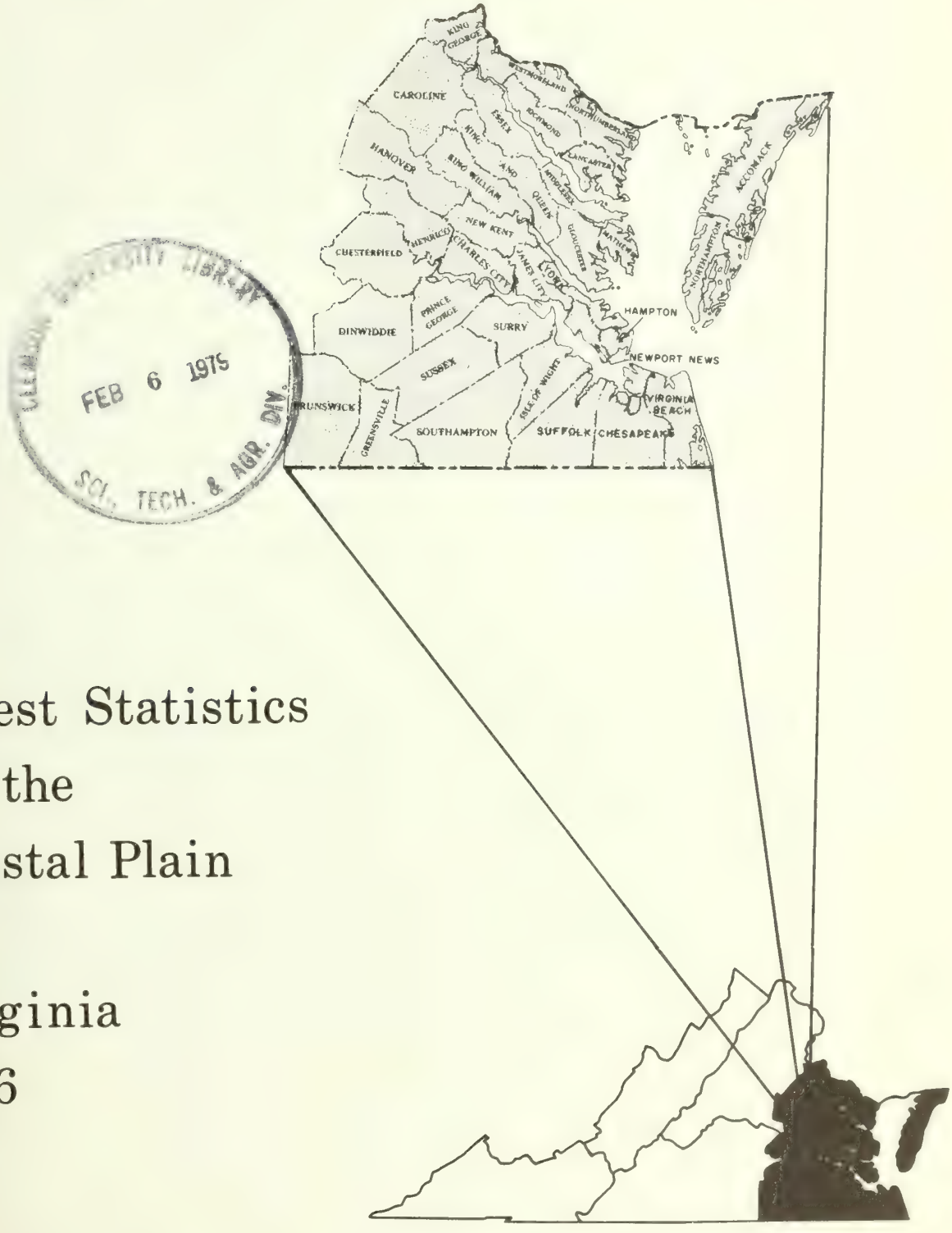
U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

SOUTHEASTERN FOREST EXPERIMENT STATION
ASHEVILLE, NORTH CAROLINA

USDA Forest Service Resource Bulletin SE-34 March 1976

FEB 6 1976
SCI. TECH. & AGR. DIV.



Forest Statistics for the Coastal Plain of Virginia 1976

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Coastal Plain of Virginia. The inventory was started in February 1975 and completed in November 1975. Three previous inventories, completed in 1940, 1956, and 1966, provide statistics for measuring changes and trends over the past 36 years. In this report, the primary emphasis is on the changes and trends since 1966. Previously reported figures have been adjusted to provide the best estimate of real change.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, as amended, and by the Forest and Rangeland Renewable Resources Planning Act of 1974, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 34-county area covered by this report is one of five survey units in Virginia. Comparable reports for the other four units will be issued as the Statewide inventory progresses. When completed, this inventory will provide updated statistics on the timber resource for all of Virginia.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Weyerhaeuser Company in the collection of the field data. Appreciation is also expressed for the excellent cooperation of the Virginia Division of Forestry, other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics for the Coastal Plain of Virginia 1976

by

Noel D. Cost, Resource Analyst

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HIGHLIGHTS

Since 1966 in the Coastal Plain of Virginia--

--area of commercial forest land has decreased by 76,000 acres, or less than 2 percent. Some 167,000 acres of commercial forest were diverted to other land uses, while only 91,000 acres of new forest were added. About 66 percent of the diversion was to urban development and agricultural use, and most of the remaining diversion was land reclassified as productive-reserved forest, primarily the Dismal Swamp National Wildlife Refuge. Commercial forest land now totals 4.0 million acres, or 63 percent of the total land in this 34-county area.

--area of commercial forest land owned by farmers has declined from 1.9 to 1.7 million acres. Land clearing accounted for more than 34 percent of this decrease, and the remaining change was attributed to shifts in ownership mostly from the farmer to the private, nonindustrial owner class. Together, farmer-owned and other privately owned nonindustrial woodlands make up 77 percent of the commercial forest. The acreage of forest land owned or leased by forest industries and that owned by the public have both increased slightly.

--about 35 percent of the land now classified as commercial forest has been treated or significantly disturbed. More than 787,000 acres were harvested and some 25 percent of these harvested acres were subsequently artificially regenerated. Altogether, more than 300,000 acres were artificially reforested over the 9-year period. By ownership class, 57 percent of the artificial reforestation was on lands owned or leased by forest industries; 42 percent was on other private land, and the remaining 1 percent was on public holdings. In addition to the acres harvested or artificially regenerated, more than 313,000 acres experienced either stand improvement or thinning. Other common types of treatment and disturbance in evidence were grazing, site preparation, and substantial damage from insects and other natural destructive agents.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 67 to 71 square feet per acre, and the number of sapling-sized trees has increased from 700 to 740 per acre. Despite this buildup in stocking--1 out of every 6 acres--some 636,000 acres of commercial forest land are still either nonstocked or poorly stocked. Therefore, current net growth of growing stock, which averages 60 cubic feet per acre annually, could be substantially increased.

--volume of softwood growing stock, primarily pine, has continued to decrease, but at a slower rate than between the two previous surveys. Volume of softwood growing stock decreased 2 percent, compared to an 8-percent decrease between 1956 and 1966. Volume of loblolly pine, the area's most important timber species, was down by 1 percent. Other major softwood species showing greater percentage volume reductions were shortleaf pine and cypress. Practically all the gain came from Virginia pine. Over three-fourths of the decrease was in the 8- and 10-inch diameter classes. Volume of softwood sawtimber declined from 8.5 to 8.4 billion board feet, or by 2 percent.

--volume of hardwood has continued to increase, and at a faster rate than between the two previous surveys. Volume of hardwood growing stock was up 8 percent, compared to a 3-percent increase between 1956 and 1966. Yellow-poplar, oaks, beech, soft maple, and sweetgum accounted for most of the recent increase. There was little change in the volume of hickory and ash. Volume of blackgum and tupelo was down by 28 percent. It is also significant that the increase in hardwood volume occurred across the range of diameter classes. The volume of hardwood sawtimber increased from 8.1 to 8.9 billion board feet, or by 10 percent.

In 1975--

--net growth of growing stock totaled 240 million cubic feet and exceeded removals by 33 million cubic feet, or 14 percent. Hardwoods accounted for most of this excess growth over removals, and a deficit still existed in the growth of pine. The pine growth deficit was reduced however, and, except for the unusually high loss to pine bark beetles, would have been eliminated. Net growth of pine increased by 8 percent, while pine removals decreased; but pine mortality jumped by 45 percent. For all species combined, 20 percent of the growth occurred on lands owned or leased by forest industries, 76 percent on other private lands, and 4 percent on public lands.

--removals of growing stock totaled 207 million cubic feet and included 786 million board-feet of sawtimber. Since the previous survey, softwood removals decreased 14 percent, and hardwood removals increased 2 percent. Even with a reduction in softwood removals, pine still provides a disproportionate share of these removals. For example, pine made up 42 percent of the inventory, accounted for 42 percent of the net growth, but provided 53 percent of the removals. By ownership class, 22 percent of the removals were from lands owned or leased by forest industries, 75 percent from other private lands, and 3 percent from public lands.

--mortality of growing stock totaled 35 million cubic feet and included 93 million board feet of sawtimber. About 72 percent of this mortality was pine. The pine bark beetle was the leading identifiable cause of death. For both softwood and hardwood, suppression and climatic factors were also significant causes of death. Altogether, mortality reduced gross growth by about 13 percent.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 22,034 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 2,123 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 1,330 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees in the Coastal Plain of Virginia, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 33 active cutting operations which will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 1,359 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	0.95
Per billion cubic feet of growing stock	4.98
Per billion cubic feet of net annual growth	1.00
Per billion cubic feet of annual removals	2.61

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
ACCOMACK	3.42	13.05	11.60	44.62
BRUNSWICK	1.09	8.96	7.92	18.53
CAROLINE	2.07	7.04	7.46	28.47
CHARLES CITY	3.60	16.54	13.56	30.03
CHESAPEAKE	4.97	12.16	12.55	37.93
CHESTERFIELD	2.13	9.58	8.53	25.50
DINWIDDIE	1.77	9.70	8.83	19.85
ESSEX	2.02	13.33	13.61	40.01
GLOUCESTER	3.47	11.77	12.13	59.39
GREENSVILLE	1.70	10.37	10.44	22.10
HAMPTON	18.31	0.00	0.00	0.00
HANOVER	1.72	9.96	10.19	21.36
HENRICO	3.34	10.63	11.51	34.20
ISLE OF WIGHT	2.35	11.21	11.18	33.50
JAMES CITY	4.06	13.47	18.42	40.30
KING AND QUEEN	2.34	11.44	9.54	28.97
KING GEORGE	3.77	12.86	13.81	38.00
KING WILLIAM	2.14	14.12	12.23	34.84
LANCASTER	3.90	22.07	32.45	52.55
MATHEWS	6.34	17.67	15.41	100.14
MIDDLESEX	3.61	23.54	20.24	57.79
NEW KENT	2.05	11.51	12.86	42.01
NEWPORT NEWS	10.60	46.15	42.60	54.88
NORTHAMPTON	6.16	13.78	19.87	71.94
NORTHUMBERLAND	2.91	18.23	14.88	45.76
PRINCE GEORGE	1.96	11.96	10.12	30.60
RICHMOND	2.57	17.62	15.14	46.81
SOUTHAMPTON	1.28	7.92	8.34	22.28
SUFFOLK	2.93	11.31	11.65	30.81
SURRY	1.77	8.85	7.91	26.85
SUSSEX	1.06	8.40	7.74	20.43
VIRGINIA BEACH	5.86	10.78	16.50	71.51
WESTMORELAND	2.87	14.95	15.20	40.51
YORK	10.57	19.91	15.25	34.13
UNIT TOTAL	0.47	2.11	2.05	5.73

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to pole-timber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtim-ber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.4	61.0	68.2	60.0
8	68.3	68.1	76.0	68.4
10	73.3	73.1	81.4	73.4
12	76.6	76.7	85.2	76.4
14	78.9	79.4	88.2	78.4
16	80.6	81.6	90.4	79.8
18	81.7	83.3	92.3	80.8
20	82.6	84.8	93.8	81.5
22	83.2	86.0	95.1	82.1
24+	84.0	87.5	98.3	83.1
AVERAGE	74.3	74.1	87.5	74.3

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1976*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
			ACRES			
ACCOMACK	304,640	117,115	114,092	2,123	900	187,525
BRUNSWICK	366,933	290,505	290,505	--	--	76,428
CAROLINE	346,524	263,294	263,294	--	--	83,230
CHARLES CITY	115,840	87,739	87,509	--	230	28,101
CHESAPEAKE	270,720	130,445	113,784	--	16,661	140,275
CHESTERFIELD	303,594	216,119	211,294	--	4,825	87,475
DINWIDDIE	327,609	246,833	246,146	--	687	80,776
ESSEX	160,000	107,164	107,164	--	--	52,836
GLOUCESTER	145,920	96,044	96,044	--	--	49,876
GREENSVILLE	192,640	138,074	138,074	--	--	54,566
HAMPTON	35,200	6,523	6,523	--	--	28,677
HANOVER	301,380	198,812	198,593	--	219	102,568
HENRICO	161,854	72,119	71,760	--	359	89,735
ISLE OF WIGHT	202,880	123,178	123,178	--	--	79,702
JAMES CITY	100,480	66,453	62,651	--	3,802	34,027
KING AND QUEEN	203,520	160,961	160,961	--	--	42,559
KING GEORGE	112,640	72,191	69,762	--	2,429	40,449
KING WILLIAM	178,133	125,112	125,112	--	--	53,021
LANCASTER	87,680	51,686	51,686	--	--	35,994
MATHEWS	56,960	34,106	34,106	--	--	22,854
MIDDLESEX	83,200	53,831	53,831	--	--	29,369
NEW KENT	132,762	101,407	101,407	--	--	31,355
NEWPORT NEWS	44,160	15,665	15,442	--	223	28,495
NORTHAMPTON	140,800	32,202	31,586	616	--	108,598
NORTHUMBERLAND	121,600	69,188	69,188	--	--	52,412
PRINCE GEORGE	183,040	120,644	119,660	--	984	62,396
RICHMOND	121,600	79,027	79,027	--	--	42,573
SOUTHAMPTON	387,840	263,927	263,927	--	--	123,913
SUFFOLK	262,400	163,455	134,912	--	28,543	98,945
SURRY	177,280	134,945	133,958	--	987	42,335
SUSSEX	316,160	248,554	248,554	--	--	67,606
VIRGINIA BEACH	165,760	60,778	57,598	--	3,180	104,982
WESTMORELAND	146,560	88,496	86,931	--	1,565	58,064
YORK	82,560	38,742	35,280	--	3,462	43,818
TOTAL	6,340,869	4,075,334	4,003,539	2,739	69,056	2,265,535

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 95,947 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1976*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY[1]	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
ACCOMACK	114,092	--	200	--	--	12,456	73,455	10,493	17,488
BRUNSWICK	290,505	--	5,420	3,643	75	74,534	107,615	9,225	89,993
CAROLINE	263,294	-	57,480	58	166	14,971	96,693	11,050	82,876
CHARLES CITY	87,509	--	--	3,135	112	21,985	29,656	2,956	29,655
CHESAPEAKE	113,784	--	3,378	--	870	10,170	15,526	37,262	46,578
CHESTERFIELD	211,294	--	446	7,230	1,128	30,891	34,953	31,779	104,867
DINWIDDIE	246,146	--	6,274	350	340	67,481	90,350	6,024	75,327
ESSEX	107,164	--	109	--	433	9,494	71,227	9,713	16,188
GLOUCESTER	96,044	--	--	80	46	13,109	17,566	2,509	62,734
GREENSVILLE	138,074	--	--	--	396	40,314	56,091	--	41,273
HAMPTON	6,523	--	248	--	--	--	--	--	6,275
HANOVER	198,593	--	--	1,211	175	14,209	88,448	18,300	75,250
HENRICO	71,750	--	20	2,172	735	2,384	11,558	11,556	43,335
ISLE OF WIGHT	123,178	--	--	10	841	27,084	73,019	3,175	19,049
JAMES CITY	62,651	--	1,113	993	1,876	5,925	15,071	15,070	22,603
KING AND QUEEN	160,961	--	--	320	417	49,320	55,452	--	55,452
KING GEORGE	69,762	--	1,125	175	75	2,054	22,111	5,528	38,694
KING WILLIAM	125,112	--	485	--	17	23,269	55,276	3,071	42,994
LANCASTER	51,686	--	--	--	--	7,417	16,601	--	27,668
MATHEWS	34,106	--	--	--	--	5,907	8,460	--	19,739
MIDDLESEX	53,831	--	--	--	35	2,642	20,463	--	30,691
NEW KENT	101,407	--	--	413	96	28,180	18,180	3,030	51,508
NEWPORT NEWS	15,442	--	2,331	--	2,162	--	--	10,949	--
NORTHAMPTON	31,586	--	20	--	--	138	18,333	2,619	10,476
NORTHUMBERLAND	69,188	--	--	--	--	12,042	36,092	--	21,054
PRINCE GEORGE	119,660	--	2,609	164	236	33,662	51,259	2,441	29,289
RICHMOND	79,027	--	--	11	58	14,887	44,849	--	19,222
SOUTHAMPTON	263,927	--	--	1,750	15	59,922	181,674	--	20,566
SUFFOLK	134,912	--	--	2	1,974	32,768	70,385	8,124	21,659
SURRY	133,958	--	--	952	--	47,702	67,656	--	17,648
SUSSEX	248,554	--	--	80	114	92,242	129,609	--	26,509
VIRGINIA BEACH	57,598	--	2,222	625	779	2,590	19,270	6,423	25,689
WESTMORELAND	86,931	--	--	--	136	7,085	52,227	--	27,483
YORK	35,280	--	19,622	--	6,454	--	1,314	2,630	5,260
TOTAL	4,003,539	--	103,102	23,374	19,761	766,834	1,650,439	213,937	1,226,092

[1]NOT INCLUDING 2,061 ACRES OF FARMER-OWNED AND MISCELLANEOUS PRIVATE LANDS LEASED TO FOREST INDUSTRY.

TABLE 3.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1976*

COUNTY	ALL TYPE GROUPS	FOREST TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
					ACRES					
ACCOMACK	114,092	--	--	--	41,205	24,302	45,088	3,497	--	--
BRUNSWICK	290,505	--	--	--	94,012	58,046	125,323	--	13,124	--
CAROLINE	263,294	--	--	--	101,760	50,229	93,661	8,288	9,356	--
CHARLES CITY	87,509	--	--	--	29,653	28,089	26,802	2,965	--	--
CHESAPEAKE	113,784	--	--	--	11,349	14,456	6,211	81,768	--	--
CHESTERFIELD	211,294	--	--	--	62,697	39,739	99,101	6,579	3,178	--
DINWIDDIE	246,146	--	--	--	99,972	57,258	82,893	3,012	3,011	--
ESSEX	107,164	--	--	--	32,230	16,116	48,562	7,018	3,238	--
GLOUCESTER	96,044	--	--	--	32,623	14,083	41,808	7,530	--	--
GREENSVILLE	138,074	--	--	--	49,310	21,678	41,059	17,020	9,007	--
HAMPTON	6,523	--	--	--	248	-	--	6,275	--	--
HANOVER	198,593	--	--	--	65,053	31,886	89,454	12,200	-	--
HENRICO	71,760	--	--	--	17,372	8,668	43,336	--	2,384	--
ISLE OF WIGHT	123,178	--	--	--	39,362	22,434	42,334	15,873	3,175	--
JAMES CITY	62,651	--	--	--	14,266	18,837	29,548	--	--	--
KING AND QUEEN	160,961	--	--	--	53,716	37,408	50,910	18,927	--	--
KING GEORGE	69,762	--	--	--	7,582	11,055	50,950	175	--	--
KING WILLIAM	125,112	--	--	--	54,481	18,426	46,063	6,142	--	--
LANCASTER	51,686	--	--	--	18,485	11,067	22,134	--	--	--
MATHEWS	34,106	--	--	--	22,827	2,820	8,459	--	--	--
MIDDLESEX	53,831	--	--	--	11,552	18,371	23,873	35	--	--
NEW KENT	101,407	--	--	--	33,938	20,528	42,245	--	4,696	--
NEWPORT NEWS	15,442	--	--	-	13,111	--	2,331	--	--	--
NORTHAMPTON	31,586	--	--	-	13,115	,857	7,995	2,619	--	--
NORTHUMBERLAND	69,188	--	--	--	15,650	2,408	48,123	3,007	--	--
PRINCE GEORGE	119,660	--	--	-	51,463	2,440	60,875	4,882	--	--
RICHMOND	79,027	--	--	--	25,944	3,204	40,270	6,406	3,203	--
SOUTHAMPTON	263,927	--	--	--	95,150	34,088	85,749	45,512	3,428	--
SUFFOLK	134,912	--	--	--	26,846	36,434	47,265	18,952	5,415	--
SURRY	133,958	--	--	--	44,441	29,492	48,552	11,473	--	--
SUSSEX	248,554	--	-	--	92,079	53,170	70,785	20,648	11,872	--
VIRGINIA BEACH	57,598	--	--	-	2,530	6,422	12,482	36,104	--	--
WESTMORELAND	86,931	-	-	-	28,574	10,994	49,614	2,749	--	--
YORK	35,280	--	--	--	14,397	--	20,883	--	--	--
TOTAL	4,003,539	--	--	--	1,312,053	712,005	1,554,738	349,656	75,087	--

TABLE 4. AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1976

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
	ACRES				
ACCOMACK	114,092	44,320	38,675	31,097	--
BRUNSWICK	290,505	61,869	98,465	131,096	3,075
CAROLINE	263,294	95,845	110,948	56,501	--
CHARLES CITY	87,509	27,388	18,493	41,628	--
CHESAPEAKE	113,784	56,930	38,224	18,630	--
CHESTERFIELD	211,294	78,899	59,941	66,900	5,554
DINWIDDIE	246,146	98,674	70,359	70,365	6,748
ESSEX	107,164	45,254	35,613	26,297	--
GLOUCESTER	96,044	40,160	38,328	15,056	2,510
GREENSVILLE	138,074	50,676	33,357	46,711	7,330
HAMPTON	6,523	6,523	--	--	--
HANOVER	198,593	64,551	75,590	55,402	3,050
HENRICO	71,760	17,335	42,869	11,556	--
ISLE OF WIGHT	123,178	84,659	12,698	22,646	3,175
JAMES CITY	62,651	31,439	18,839	12,373	--
KING AND QUEEN	160,961	55,022	43,572	56,205	6,162
KING GEORGE	69,762	26,250	35,220	8,292	--
KING WILLIAM	125,112	61,920	18,264	41,857	3,071
LANCASTER	51,686	16,601	21,545	13,540	--
MATHEWS	34,105	17,053	8,460	8,593	--
MIDDLESEX	53,831	23,907	13,640	16,284	--
NEW KENT	101,410	46,435	30,603	24,369	--
NEWPORT NEWS	15,442	12,114	2,162	--	1,166
NORTHAMPTON	31,586	5,258	18,333	7,995	--
NORTHUMBERLAND	69,188	35,495	13,838	19,855	--
PRINCE GEORGE	119,660	51,826	31,440	36,394	--
RICHMOND	79,027	33,794	18,568	26,665	--
SOUTHAMPTON	263,927	121,040	65,244	74,216	3,427
SUFFOLK	134,912	58,828	33,728	34,967	7,389
SURRY	133,958	75,924	28,248	29,786	--
SUSSEX	248,554	109,660	50,285	88,609	--
VIRGINIA BEACH	57,598	35,118	19,268	3,212	--
WESTMORELAND	86,931	44,876	41,226	20,829	--
YORK	35,280	16,939	17,026	1,315	--
TOTAL	4,003,539	1,628,572	1,203,069	1,119,241	52,657

TABLE 5. - AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1976

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
	ACRES					
ACCOMACK	114,092	--	3,498	27,599	76,000	6,995
BRUNSWICK	290,505	--	--	42,774	232,451	15,280
CAROLINE	263,294	--	--	14,883	227,199	21,212
CHARLES CITY	87,509	--	--	20,059	64,484	2,966
CHESAPEAKE	113,784	--	2,034	17,560	63,139	31,051
CHESTERFIELD	211,294	--	--	9,533	172,937	28,824
DINWIDDIE	246,146	--	--	29,008	201,716	15,422
ESSEX	107,164	--	3,238	6,475	87,197	10,254
GLOUCESTER	96,044	--	--	29,267	64,267	2,510
GREENSVILLE	138,074	--	--	27,704	104,034	6,336
HAMPTON	6,523	--	--	248	6,275	--
HANOVER	198,593	--	--	15,250	171,143	12,200
HENRICO	71,760	--	--	2,889	54,426	14,445
ISLE OF WIGHT	123,178	--	--	19,470	91,008	12,700
JAMES CITY	62,651	--	--	18,838	43,813	--
KING AND QUEEN	160,961	--	--	--	154,357	6,604
KING GEORGE	69,762	--	--	16,583	53,179	--
KING WILLIAM	125,112	--	--	18,263	97,636	9,213
LANCASTER	51,686	--	--	5,534	40,619	5,533
MATHEWS	34,105	--	2,820	14,099	14,367	2,820
MIDDLESEX	53,831	--	--	13,641	33,369	6,821
NEW KENT	101,410	--	--	17,498	83,909	--
NEWPORT NEWS	15,442	--	--	12,115	3,327	--
NORTHAMPTON	31,586	--	2,619	5,238	21,110	2,619
NORTHUMBERLAND	69,188	--	--	16,850	31,885	20,453
PRINCE GEORGE	119,660	--	--	24,409	80,678	14,573
RICHMOND	79,027	--	--	20,982	54,841	3,204
SOUTHAMPTON	263,927	--	--	79,074	174,569	10,284
SUFFOLK	134,912	--	--	18,218	105,864	10,830
SURRY	133,958	--	2,941	30,608	100,409	--
SUSSEX	248,554	--	11,873	59,066	162,888	14,727
VIRGINIA BEACH	57,598	--	--	3,990	41,385	12,223
WESTMORELAND	86,931	--	--	8,247	67,688	10,996
YORK	35,280	--	--	15,028	20,252	--
TOTAL	4,003,539	--	29,023	661,000	3,002,421	311,095

TABLE 6.--AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1976

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
ACCOMACK	114,092	6,612	34,210	66,275	6,995	--
BRUNSWICK	290,505	6,150	94,194	156,432	30,654	3,075
CAROLINE	263,294	6,761	87,655	137,419	31,459	--
CHARLES CITY	87,509	2,965	28,086	53,493	2,965	--
CHESAPEAKE	113,784	--	35,191	41,331	37,262	--
CHESTERFIELD	211,294	5,554	76,603	83,875	39,708	5,554
DINWIDDIE	246,146	6,386	94,102	111,441	27,469	6,748
ESSEX	107,164	3,238	41,871	45,326	16,729	--
GLOUCESTER	96,044	2,635	22,585	51,723	16,591	2,510
GREENSVILLE	138,074	--	32,363	76,020	22,361	7,330
HAMPTON	6,523	--	6,523	--	--	--
HANOVER	198,593	12,200	68,103	83,735	31,505	3,050
HENRICO	71,760	2,889	17,334	39,981	11,556	--
ISLE OF WIGHT	123,178	--	45,500	49,106	25,397	3,175
JAMES CITY	62,651	3,768	23,677	31,439	3,767	--
KING AND QUEEN	160,961	9,242	52,829	76,590	16,138	6,162
KING GEORGE	69,762	4,818	19,346	34,543	11,055	--
KING WILLIAM	125,112	--	54,481	55,276	12,284	3,071
LANCASTER	51,686	--	10,479	24,606	16,601	--
MATHEWS	34,106	2,820	14,367	16,919	--	--
MIDDLESEX	53,831	3,411	11,552	25,193	13,675	--
NEW KENT	101,407	3,030	29,241	57,699	11,437	--
NEWPORT NEWS	15,442	10,949	2,162	1,165	--	1,166
NORTHAMPTON	31,586	2,619	--	26,210	2,757	--
NORTHUMBERLAND	69,188	3,008	16,249	28,878	21,053	--
PRINCE GEORGE	119,660	2,440	46,654	58,434	12,132	--
RICHMOND	79,027	--	20,981	39,547	18,499	--
SOUTHAMPTON	263,927	10,284	71,983	145,078	33,155	3,427
SUFFOLK	134,912	--	35,702	70,896	20,925	7,389
SURRY	133,958	2,651	34,424	91,583	5,300	--
SUSSEX	248,554	--	86,070	115,238	47,246	--
VIRGINIA BEACH	57,598	--	15,694	29,681	12,223	--
WESTMORELAND	86,931	--	23,710	38,482	24,739	--
YORK	35,280	11,083	3,945	20,252	--	--
TOTAL	4,003,539	125,513	1,257,866	1,983,866	583,637	52,657

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7. - VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
ACCOMACK	429,909	319,454	--	49,981	61,474	181,441	104,708	--	32,267	38,373
BRUNSWICK	635,393	387,069	2,211	145,505	100,608	280,464	140,180	1,110	62,742	76,363
CAROLINE	1,0[illegible]01	44[illegible]9[illegible]	--	2[illegible]9,[illegible]07	3[illegible]1,[illegible]04	[illegible]0[illegible],[illegible]00	1[illegible]2,330	[illegible]40	[illegible]0,585	1[illegible]5,450
CHARLES CITY	319,162	123,531	13,319	58,228	123,084	101,[illegible]1[illegible]	38,504	4,070	23,865	42,087
CHESAPEAKE	6[illegible],462	21[illegible],551	3,440	261,818	1[illegible]0,[illegible]03	1[illegible]8,[illegible]4[illegible]	4[illegible],951	70[illegible]	[illegible]4,[illegible]88	33,800
CHESTERFIELD	742,358	32[illegible],274	--	150,132	269,452	264,70[illegible]	9[illegible],291	460	5[illegible],485	112,470
DINWIDDIE	1,031,850	64[illegible],391	3,668	143,896	236,805	332,402	160,634	2,417	63,416	105,933
ESSEX	491,213	214,706	--	119,032	147,475	155,[illegible]70	5[illegible],589	--	44,308	51,473
GLOUCESTER	526,898	271,805	--	125,393	129,700	151,617	67,902	--	44,275	39,436
GREENSVILLE	535,204	270,98[illegible]	2,375	109,071	1[illegible]3,871	17[illegible],35[illegible]	7[illegible],003	878	3[illegible],738	59,[illegible]04
HAMPTON	[illegible]7,539	3,310	--	--	24,029	[illegible],327	2,489	--	--	[illegible],84[illegible]
HANOVER	653,810	236,891	1,416	141,628	273,875	2[illegible],856	98,229	1,681	[illegible]5,[illegible]98	[illegible]7,348
HENRICO	235,[illegible]58	96,669	--	[illegible]2,986	[illegible]7,104	[illegible]6,[illegible]83	3[illegible],110	267	[illegible]1,873	4[illegible],033
ISLE OF WIGHT	796,522	419,945	--	183,870	2[illegible],707	214,170	95,167	--	57,[illegible]04	61,309
JAMES CITY	289,990	83,035	--	49,926	157,029	97,559	28,495	223	18,538	50,303
KING AND QUEEN	601,210	267,152	8,929	113,839	211,290	209,00[illegible]	84,840	1,752	4[illegible],[illegible]31	[illegible]2,415
KING GEORGE	275,251	53,124	3,185	126,859	92,083	[illegible]8,[illegible]83	18,745	1,073	4[illegible],[illegible]30	[illegible]2,359
KING WILLIAM	563,[illegible]90	323,145	2,586	78,532	159,727	1[illegible]1,204	62,189	856	26,102	[illegible]2,097
LANCASTER	123,[illegible]49	85,610	--	5,862	32,477	47,424	18,222	--	5,600	13,602
MATHEWS	17[illegible],977	117,667	--	20,014	38,296	54,[illegible]72	35,892	--	7,790	11,050
MIDDLESEX	213,824	141,448	--	46,823	25,553	66,[illegible]53	38,409	--	17,100	10,744
NEW KENT	53[illegible],852	187,884	--	136,[illegible]98	208,670	1[illegible],841	57,434	--	38,686	62,722
NEWPORT NEWS	15[illegible],[illegible]11	103,685	--	19,036	29,790	3[illegible],442	24,938	--	6,450	7,054
NORTHAMPTON	113,396	89,251	--	11,412	12,733	42,657	25,723	--	10,186	6,748
NORTHUMBERLAND	277,990	129,442	--	62,868	85,680	86,683	34,742	--	21,149	30,792
PRINCE GEORGE	560,257	243,845	26,018	147,819	142,575	170,269	61,363	4,632	50,122	54,152
RICHMOND	328,173	86,062	--	115,876	126,235	105,359	31,111	--	37,774	36,474
SOUTHAMPTON	1,535,946	642,103	150,455	412,708	330,680	445,248	172,154	31,371	138,225	103,498
SUFFOLK	617,746	168,973	15,391	262,633	170,789	186,910	44,862	3,215	85,447	53,386
SURRY	626,780	297,532	6,568	141,207	181,473	192,243	84,224	1,618	45,706	60,695
SUSSEX	1,334,736	869,44[illegible]	7,843	218,245	239,205	377,343	210,619	1,712	74,683	90,329
VIRGINIA BEACH	29[illegible],400	6[illegible],09[illegible]	3,321	1[illegible],0[illegible]	[illegible]0,921	[illegible]4,685	[illegible],117	704	[illegible]0,144	28,220
WESTMORELAND	24[illegible],748	67,17[illegible]	--	[illegible]1,[illegible]	116,850	[illegible]4,025	3[illegible],496	10[illegible]	[illegible]0,980	41,397
YORK	314,[illegible]91	12[illegible],31[illegible]	-	[illegible]3,[illegible]39	115,440	88,083	33,[illegible]4[illegible]	--	23,219	31,217
TOTAL	17,29[illegible],[illegible]96	[illegible],1[illegible],[illegible]52	[illegible]52,585	[illegible],[illegible]74,[illegible]52	4,949,[illegible]37	5,879,487	2,[illegible]64,293	58,791	1,[illegible]80,141	1,746,25[illegible]

[illegible]FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ACCOMACK	30,526	21,080	--	3,665	5,781	7,131	4,168	--	1,387	1,576
BRUNSWICK	37,247	21,475	57	7,053	8,662	12,627	5,975	82	3,080	3,490
CAROLINE	62,672	29,487	--	13,521	19,664	18,074	8,531	25	3,749	5,769
CHARLES CITY	17,768	6,681	608	3,078	7,401	4,575	1,640	99	972	1,864
CHESAPEAKE	25,540	7,456	141	12,622	5,321	6,248	1,219	21	3,788	1,220
CHESTERFIELD	43,676	17,966	--	8,417	17,293	12,295	4,639	23	2,383	5,250
DINWIDDIE	53,458	26,228	153	9,156	17,921	14,075	5,841	78	3,131	5,025
ESSEX	25,573	9,165	--	6,435	9,973	7,102	2,865	--	2,154	2,083
GLOUCESTER	24,979	12,399	--	6,253	6,327	6,224	2,457	--	2,224	1,543
GREENSVILLE	26,728	11,860	185	6,401	8,282	7,829	3,327	56	2,078	2,368
HAMPTON	900	123	--	--	777	351	147	--	--	204
HANOVER	41,966	21,773	89	6,598	13,506	13,096	6,223	38	3,040	3,795
HENRICO	15,882	4,840	--	4,038	7,004	4,361	1,275	10	980	2,096
ISLE OF WIGHT	32,181	17,120	--	6,564	8,497	6,952	2,758	--	2,302	1,892
JAMES CITY	14,630	4,232	39	3,486	6,873	4,703	2,006	4	829	1,864
KING AND QUEEN	34,841	14,473	380	7,917	12,071	9,431	4,193	68	2,226	2,944
KING GEORGE	16,710	3,967	120	8,872	3,751	3,804	706	18	2,000	1,080
KING WILLIAM	30,354	15,715	45	6,932	7,662	6,611	3,203	18	1,432	1,958
LANCASTER	7,443	4,229	--	381	2,833	3,158	2,186	--	449	523
MATHEWS	9,818	7,075	--	737	2,006	3,029	2,179	--	377	473
MIDDLESEX	10,656	5,975	--	3,112	1,569	2,996	1,659	--	861	476
NEW KENT	25,273	7,702	--	8,149	9,422	7,781	3,759	--	1,785	2,237
NEWPORT NEWS	5,791	4,206	--	595	990	1,343	767	--	351	225
NORTHAMPTON	5,850	4,349	--	1,034	467	1,681	1,006	--	337	338
NORTHUMBERLAND	14,469	6,117	--	3,219	5,133	3,420	1,219	--	891	1,310
PRINCE GEORGE	29,215	10,283	828	10,240	7,864	7,707	2,350	116	2,508	2
RICHMOND	16,590	6,016	--	5,125	5,449	4,491	1,511	--	1,590	
SOUTHAMPTON	65,758	29,726	6,720	16,267	13,045	17,912	7,401	1,016	5,095	
SUFFOLK	25,693	7,087	704	10,751	7,151	8,352	2,896	105	3,321	
SURRY	28,788	15,781	266	5,786	6,955	7,186	3,009	46	1,451	
SUSSEX	58,018	35,822	357	8,124	13,715	13,999	7,282	55	2,510	
VIRGINIA BEACH	13,481	2,442	130	6,540	4,369	3,920	386	19	2,389	1,126
WESTMORELAND	15,387	4,938	--	4,734	5,715	4,640	1,756	4	1,106	1,774
YORK	13,978	6,762	--	3,414	3,802	3,200	1,103	8	950	1,139
TOTAL	881,839	404,550	10,822	209,216	257,251	240,304	101,642	1,909	63,726	73,027

TABLE 9.--ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
ACCOMACK	24,934	23,699	--	617	618	4,877	4,471	--	236	170
BRUNSWICK	65,843	49,165	--	6,934	9,744	18,853	13,873	--	2,074	2,906
CAROLINE	20,254	12,910	--	3,160	4,184	6,606	3,591	--	1,456	1,559
CHARLES CITY	34,401	27,099	--	3,024	4,278	8,422	5,362	--	1,575	1,485
CHESAPEAKE	24,725	12,966	--	7,817	3,942	4,886	2,405	--	1,657	824
CHESTERFIELD	32,964	23,999	--	4,992	3,973	8,505	5,132	--	1,523	1,850
DINWIDDIE	47,370	23,345	--	4,217	19,808	13,007	5,914	--	1,180	5,913
ESSEX	1,790	1,049	--	741	--	980	546	--	318	116
GLOUCESTER	20,377	11,450	--	4,958	3,969	4,489	2,411	--	1,171	907
GREENSVILLE	39,301	12,033	--	20,048	7,220	9,941	3,026	--	4,847	2,068
HAMPTON	--	--	--	--	--	--	--	--	--	--
HANOVER	38,459	22,050	--	5,215	11,194	11,028	5,484	--	2,072	3,472
HENRICO	22,437	10,728	--	5,698	6,011	5,310	2,037	--	1,301	1,972
ISLE OF WIGHT	24,197	12,198	--	7,752	4,247	5,877	2,686	--	1,914	1,277
JAMES CITY	9,332	4,900	--	1,536	2,896	3,416	1,696	--	532	1,188
KING AND QUEEN	39,030	27,958	--	2,477	8,595	10,079	7,233	--	666	2,180
KING GEORGE	14,599	2,244	512	958	10,885	4,316	1,009	98	404	2,805
KING WILLIAM	29,358	17,861	--	4,211	7,286	7,369	4,242	--	948	2,179
LANCASTER	3,901	1,593	--	2,308	--	1,564	521	--	770	273
MATHEWS	362	--	--	--	362	179	--	--	--	179
MIDDLESEX	4,289	--	--	2,501	1,788	1,469	60	--	587	822
NEW KENT	13,415	5,884	--	469	7,062	4,113	1,820	--	187	2,106
NEWPORT NEWS	7,632	5,646	--	--	1,986	1,704	1,080	--	--	624
NORTHAMPTON	2,621	2,319	--	302	--	728	504	--	69	155
NORTHUMBERLAND	9,890	2,146	--	2,862	4,882	2,793	681	--	684	1,428
PRINCE GEORGE	18,270	11,553	--	2,964	3,753	5,347	3,352	--	721	1,274
RICHMOND	10,846	4,428	--	3,056	3,362	3,441	1,797	--	811	833
SOUTHAMPTON	71,576	44,531	2,838	12,066	12,141	17,312	9,677	558	3,762	3,315
SUFFOLK	38,834	25,083	--	9,903	3,848	9,751	5,332	--	2,306	2,113
SURRY	25,668	19,054	--	736	5,878	6,350	4,422	--	138	1,790
SUSSEX	59,561	30,123	3,338	9,656	16,444	16,394	7,622	529	2,963	5,280
VIRGINIA BEACH	4,421	530	--	2,718	1,173	1,195	90	--	655	450
WESTMORELAND	8,031	5,395	--	1,468	1,168	2,594	1,562	--	471	561
YORK	17,377	3,008	--	1,477	12,892	4,335	789	--	458	3,088
TOTAL	786,065	456,947	6,688	136,841	185,589	207,230	110,427	1,185	38,456	57,162

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1976*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
			ACRES			
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	--	--	--	--	--	--
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	1,176,416	--	45,692	433,191	354,408	343,125
SHORTLEAF PINE	11,724	--	--	5,631	--	6,093
VIRGINIA PINE	121,323	--	7,664	27,308	35,715	50,636
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	--	--	--	--
POND PINE	2,590	--	--	2,590	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	1,312,053	--	53,356	468,720	390,123	399,854
HARDWOOD TYPES:						
OAK-PINE	712,005	--	18,945	115,382	299,459	278,219
OAK-HICKORY	1,551,730	--	63,212	137,231	759,574	591,713
CHESTNUT OAK	3,008	--	--	--	3,008	--
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	349,656	--	6,892	25,830	161,818	155,116
ELM-ASH-COTTONWOOD	75,087	--	3,832	19,671	36,457	15,127
MAPLE-BEECH-BIRCH	--	--	--	--	--	--
TOTAL	2,691,486	--	92,881	298,114	1,260,316	1,040,175
ALL TYPES	4,003,539	--	146,237	766,834	1,650,439	1,440,029

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1976*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
			ACRES			
NATIONAL FOREST	--	--	--	--	--	--
OTHER PUBLIC	146,237	13,892	48,247	75,810	7,122	1,166
FOREST INDUSTRY	766,834	13,569	375,463	296,366	60,301	21,135
FARMER	1,650,439	53,640	376,559	919,250	288,357	12,633
MISC. PRIVATE	1,440,029	44,412	457,597	692,440	227,857	17,723
ALL OWNERSHIPS	4,003,539	125,513	1,257,866	1,983,866	583,637	52,657

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1976*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	3,167,601	1,417,508	41,550	741,133	967,410
UPPER-STEM PORTION	653,031	294,458	8,631	151,798	198,144
TOTAL	3,820,632	1,711,966	50,181	892,931	1,165,554
POLETIMBER TREES	1,758,855	612,327	8,610	557,212	580,706
ALL GROWING-STOCK TREES	5,579,487	2,324,293	58,791	1,450,143	1,746,260
ROUGH TREES:					
SAWTIMBER-SIZE TREES	197,634	11,369	731	101,953	83,581
POLETIMBER-SIZE TREES	352,585	16,712	586	178,936	156,351
TOTAL	550,219	28,081	1,317	280,889	239,932
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	80,461	1,183	1,770	46,860	30,648
POLETIMBER-SIZE TREES	13,580	113	99	9,063	4,305
TOTAL	94,041	1,296	1,869	55,923	34,953
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	3,732	3,103	--	226	403
POLETIMBER-SIZE TREES	2,967	2,525	--	297	145
TOTAL	6,699	5,628	--	523	548
TOTAL, ALL TIMBER	6,230,446	2,359,298	61,977	1,787,478	2,021,693

TABLE 13. --*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	10,771	3,673	3,120	2,110	1,297	342	166	26	17	20	--
LOBLOLLY PINE	183,227	77,554	41,340	26,098	18,155	10,393	5,610	2,538	972	561	6
POND PINE	1,038	101	242	167	268	111	80	41	26	--	2
VIRGINIA PINE	34,175	16,405	9,878	4,775	2,263	618	163	57	12	4	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	1,365	139	133	174	233	241	162	65	85	117	16
PONDCYPRESS	108	--	--	17	26	--	15	25	5	16	4
CEDARS	2,455	1,611	611	156	41	31	--	5	--	--	--
TOTAL SOFTWOODS	233,139	99,483	55,324	33,497	22,283	11,736	6,196	2,757	1,117	718	28
HARDWOOD:											
SELECT WHITE OAKS	50,608	17,691	12,129	8,417	5,545	3,210	1,762	971	438	407	38
SELECT RED OAKS	6,565	2,120	1,247	912	925	598	192	178	125	235	33
CHESTNUT OAK	1,692	352	304	236	301	221	118	99	31	30	--
OTHER WHITE OAKS	4,650	2,338	833	652	385	342	24	19	36	19	2
OTHER RED OAKS	44,387	15,884	10,852	6,443	4,397	3,233	1,692	948	432	459	47
HICKORY	13,479	5,114	3,391	2,144	1,298	712	390	217	98	102	13
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	138	85	36	--	17	--	--	--	--	--	--
SOFT MAPLE	22,722	9,332	5,782	3,146	2,029	1,004	688	418	153	144	26
BEECH	7,293	2,177	1,044	979	875	788	546	397	255	205	27
SWEETGUM	52,586	23,084	13,096	7,105	4,192	2,627	1,249	657	296	270	10
TUPELO AND BLACKGUM	17,078	6,217	3,730	2,830	1,947	1,240	571	275	144	104	20
ASH	3,542	1,261	945	483	310	301	136	77	11	17	1
COTTONWOOD	261	72	102	71	16	--	--	-	--	--	--
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW-POPLAR	28,845	9,779	6,162	4,630	3,231	2,251	1,243	716	392	414	27
BAY AND MAGNOLIA	383	292	61	23	--	--	--	7	--	--	--
BLACK CHERRY	96	--	77	19	--	--	--	--	--	--	--
BLACK WALNUT	739	259	59	169	131	59	28	14	16	4	--
SYCAMORE	1,615	213	477	284	216	125	169	51	31	44	5
BLACK LOCUST	532	206	137	79	61	35	8	6	--	--	--
ELM	3,007	1,047	953	492	229	109	84	44	28	17	4
OTHER EASTERN HARDWOODS	6,893	2,919	1,406	1,090	587	388	197	113	64	129	--
TOTAL HARDWOODS	267,111	100,442	62,823	40,204	26,692	17,243	9,097	5,207	2,550	2,600	253
ALL SPECIES	500,250	199,925	118,147	73,701	48,975	28,979	15,293	7,964	3,667	3,318	281

TABLE 14.--*VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
					THOUSAND CUBIC FEET						
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	102,648	8,157	21,096	25,835	25,805	10,385	6,665	1,402	1,087	1,916	--
LOBLOLLY PINE	1,957,202	195,555	273,064	330,938	370,336	308,535	227,845	136,610	68,207	54,837	1,275
POND PINE	16,471	299	1,341	1,869	3,856	2,880	2,812	1,421	1,713	--	280
VIRGINIA PINE	267,349	52,863	76,777	62,789	46,343	18,037	6,603	2,825	584	528	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	46,577	748	1,034	2,729	4,725	7,468	6,979	3,289	5,127	10,380	4,098
PONDCYPRESS	4,610	--	--	198	557	--	574	1,173	286	1,176	646
CEDARS	10,790	3,941	3,572	1,455	668	914	--	140	--	100	--
TOTAL SOFTWOODS	2,415,647	261,563	376,884	425,813	452,290	348,219	251,778	146,860	77,004	68,937	6,299
HARDWOOD:											
SELECT WHITE OAKS	641,572	59,788	80,524	100,228	107,771	90,036	69,541	50,087	29,781	42,879	10,937
SELECT RED OAKS	127,285	9,009	9,741	12,221	19,004	18,173	7,672	9,422	9,473	24,545	8,025
CHESTNUT OAK	37,074	1,952	2,900	3,619	6,013	6,887	4,328	4,516	2,566	2,981	1,312
OTHER WHITE OAKS	44,927	6,971	5,793	7,909	7,415	9,202	1,146	1,009	2,430	2,275	777
OTHER RED OAKS	574,378	51,644	74,624	80,159	84,029	87,117	64,718	46,356	29,861	43,892	11,978
HICKORY	166,756	15,296	22,453	27,105	26,635	21,540	15,959	12,875	7,101	11,488	6,304
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	837	349	250	--	238	--	--	--	--	--	--
SOFT MAPLE	370,439	50,099	62,107	59,731	54,654	38,204	35,709	25,505	14,760	22,411	7,259
BEECH	184,665	11,709	11,173	15,837	22,316	24,302	24,404	24,086	18,642	24,844	7,352
SWEETGUM	596,869	69,409	100,592	99,356	97,504	85,393	54,015	37,535	22,182	28,245	2,638
TUPELO AND BLACKGUM	287,381	29,912	40,524	50,284	47,251	40,980	24,859	18,756	12,547	14,088	8,180
ASH	61,040	9,343	10,330	8,765	8,866	10,322	6,166	4,048	766	2,084	350
COTTONWOOD	2,174	308	723	803	340	--	--	--	--	--	--
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW-POPLAR	433,371	33,432	44,647	60,001	66,479	65,628	49,333	37,355	27,708	41,336	7,452
BAY AND MAGNOLIA	5,970	3,280	1,279	1,029	154	--	--	228	--	--	--
BLACK CHERRY	6,123	1,822	2,437	611	657	446	--	--	--	150	--
BLACK WALNUT	13,323	925	707	2,143	2,269	1,438	1,106	959	1,862	879	1,035
SYCAMORE	35,120	1,021	4,387	4,050	4,799	3,914	6,262	2,766	2,243	4,625	1,053
BLACK LOCUST	10,975	1,570	2,256	1,907	2,509	1,614	335	618	166	--	--
ELM	44,643	5,630	8,060	8,035	5,917	4,397	4,163	2,632	2,046	2,779	984
OTHER EASTERN HARDWOODS	163,178	34,222	34,517	25,065	19,454	12,746	10,251	6,661	4,792	14,487	983
TOTAL HARDWOODS	3,808,100	397,691	520,024	568,858	584,274	522,339	379,967	285,414	188,926	283,988	76,619
ALL SPECIES	6,223,747	659,254	896,908	994,671	1,036,564	870,558	631,745	432,274	265,930	352,925	82,918

TABLE 15.--VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
					THOUSAND CUBIC FEET						
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	101,984	8,030	20,559	25,835	25,805	10,385	6,965	1,402	1,087	1,916	--
LOBLOLLY PINE	1,952,442	190,069	268,723	328,404	369,424	308,137	227,484	136,390	67,887	54,649	1,275
POND PINE	16,307	299	1,341	1,705	3,856	2,880	2,812	1,421	1,713	--	280
VIRGINIA PINE	282,560	49,963	73,443	60,506	43,426	16,719	6,114	2,581	584	324	--
PITCH PINE	--	--	--	--	--	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN HEMLOCK	--	--	--	--	--	--	--	--	--	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	44,207	649	1,034	2,365	4,725	7,468	6,762	3,289	5,127	10,056	2,752
PONDCYPRESS	4,610	--	--	198	557	--	574	1,173	286	1,176	646
CEDARS	9,954	3,581	3,346	1,305	668	914	--	140	--	--	--
TOTAL SOFTWOODS	2,393,084	252,491	368,446	420,318	448,461	346,503	250,711	146,396	76,684	68,121	4,953
HARDWOOD:											
SELECT WHITE OAKS	603,702	51,006	74,093	95,066	102,875	87,858	67,419	48,599	28,234	39,401	9,151
SELECT RED OAKS	116,194	6,825	8,147	11,244	17,605	16,939	7,454	9,294	8,401	23,419	6,856
CHESTNUT OAK	28,054	1,001	1,822	2,758	4,789	5,560	3,917	4,139	1,765	2,503	--
OTHER WHITE OAKS	38,842	6,350	4,622	6,291	6,321	8,633	842	785	2,350	2,275	373
OTHER RED OAKS	526,662	41,861	64,450	72,411	78,299	84,160	62,619	45,213	27,626	40,731	9,292
HICKORY	151,482	13,428	20,822	24,858	24,517	20,113	15,465	12,721	6,870	10,425	2,949
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	687	199	350	--	238	--	--	--	--	--	--
SOFT MAPLE	230,341	27,503	32,713	37,605	32,404	26,231	14,489	19,349	8,774	13,535	4,698
BEECH	148,644	6,447	6,833	11,928	17,176	21,640	20,725	21,004	16,993	20,044	5,301
SWEETGUM	527,434	53,919	82,443	87,283	88,979	79,990	51,547	35,572	20,946	24,832	1,923
TUPELO AND BLACKGUM	159,780	19,115	24,934	32,564	32,069	33,478	20,300	11,655	8,242	7,981	4,252
ASH	42,837	3,690	6,126	6,029	6,158	9,000	5,278	4,048	653	1,505	350
COTTONWOOD	2,077	211	723	803	340	--	--	--	--	--	--
BASSWOOD	--	--	--	--	--	--	--	--	--	--	--
YELLOW POPLAR	412,628	29,736	43,241	56,989	63,891	63,616	48,843	36,551	26,544	39,804	5,994
HARD MAPLE A	1,574	225	414	225	--	--	--	308	--	--	--
BLACK LOCUST	621	--	384	236	--	--	--	--	--	--	--
OTHER HARDWOODS	5,774	834	967	1,760	1,214	1,438	957	700	1,175	287	--
SOFT HARDWOODS	32,329	856	3,511	3,661	4,316	3,626	6,262	1,493	1,467	4,383	959
HARD HARDWOODS	4,867	417	462	906	1,305	724	335	333	--	--	--
TOTAL HARDWOODS	33,161	3,079	5,114	6,235	5,760	3,307	3,418	2,030	1,945	1,595	984
OTHER EASTERN HARDWOODS	12,073	2,161	8,254	11,131	10,656	9,881	2,355	5,581	4,055	11,706	--
TOTAL HARDWOODS	3,186,413	271,141	391,188	471,038	509,408	426,511	347,214	260,890	166,528	244,626	54,080
ALL SPECIES	5,579,497	523,632	759,634	891,356	957,869	873,014	597,925	407,293	243,212	312,747	59,033

TABLE 16. — VOLUME OF SAWTIMBER ON [illegible] 1976

SPECIES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				VOLUME AT DBH CLASS (INCHES)					
				11.0-12.9	13.0-14.9	15.0-17.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
SOFTWOOD:									
LONGLEAF PINE	—						--	--	--
SLASH PINE	—						--	--	--
SHORTLEAF PINE	32[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1[illegible]	[illegible]
LOBLOLLY PINE	20[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POND PINE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VIRGINIA PINE	51[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PITCH PINE									
TABLE-MOUNTAIN PINE			--						
SPRUCE PINE	—						--	--	--
SAND PINE	-						--	--	--
EASTERN WHITE PINE	-		-		--	--	--	--	--
EASTERN HEMLOCK		-		--		--	--	--	--
SPRUCE AND FIR		-		-			--	--	-
BALDCYPRESS	210,091	[illegible]	[illegible]	[illegible]	32,[illegible]	16,806	27,982	58,859	18,251
PONDCYPRESS	24,[illegible]	[illegible]	[illegible]	--	[illegible]	6,152	1,587	[illegible]	4,04[illegible]
CEDARS	14,074	5,[illegible]	[illegible]	4,[illegible]12		840	-	--	-
TOTAL SOFTWOODS	8,[illegible]13,137	1,[illegible]	1,[illegible]	1,[illegible]	1,376,754	858,680	471,049	43[illegible]	33,359
HARDWOOD:									
SELECT WHITE OAKS	1,602,412	-	335,244	3[illegible]	[illegible]	227,339	138,920	211,804	56,983
SELECT RED OAKS	405,021	--	57,734	[illegible]	[illegible]	44,451	40,938	124,670	39,036
CHESTNUT OAK	91,[illegible]	--	14,621	[illegible]	[illegible]	18,419	8,316	12,[illegible]	--
OTHER WHITE OAKS	94,142	-	[illegible]	[illegible]	[illegible]	3,[illegible]	12,453	13,[illegible]	2,315
OTHER RED OAKS	1,527,[illegible]		[illegible]	[illegible]	[illegible]	219,206	142,542	22[illegible]	[illegible]
HICKORY	408,[illegible]		[illegible]	[illegible]	[illegible]	62,549	[illegible]	58,618	[illegible]
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	838		839	--			--	--	--
SOFT MAPLE	541,[illegible]	-	[illegible]	[illegible]	101,574	86,493	41,756	[illegible]	[illegible]
BEECH	485,[illegible]	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SWEETGUM	1,374,050	--	318,033	342,785	[illegible]	185,894	117,203	148,556	13,152
TUPELO AND BLACKGUM	500,975	-	115,192	128,046	[illegible]	54,775	42,175	45,163	28,452
ASH	109,[illegible]		20,33[illegible]	[illegible]	[illegible]	18,863	[illegible]	[illegible]	[illegible]
COTTONWOOD	[illegible]	-	[illegible]	--	-	--	-		--
BASSWOOD	--		--	--	--	--	-		--
YELLOW-POPLAR	1,[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BAY AND MAGNOLIA	[illegible]	-	-	--	-	1,034	--	--	--
BLACK CHERRY	-	--	--	--	--	--	--	--	--
BLACK WALNUT	23,738	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	--
SYCAMORE	105,416	--	13,006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BLACK LOCUST	9,756	--	[illegible]	[illegible]	[illegible]	[illegible]	-	--	-
ELM	79,962	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTHER EASTERN HARDWOODS	201,061		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
TOTAL HARDWOODS	[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ALL SPECIES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 17. --*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	101,642	110,427
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	1,564	1,087
OTHER EASTERN SOFTWOODS	345	98
TOTAL SOFTWOODS	103,551	111,612
HARDWOOD:		
SELECT WHITE AND RED OAKS	30,601	23,721
OTHER WHITE AND RED OAKS	29,121	24,105
HICKORY	4,480	5,047
YELLOW BIRCH	--	--
HARD MAPLE	42	--
SWEETGUM	19,285	12,927
ASH, WALNUT, AND BLACK CHERRY	1,921	538
YELLOW-POPLAR	25,368	12,181
TUPELO AND BLACKGUM	5,129	6,560
BAY AND MAGNOLIA	73	78
OTHER EASTERN HARDWOODS	20,733	10,461
TOTAL HARDWOODS	136,753	95,618
ALL SPECIES	240,304	207,230

TABLE 18. --*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	404,550	456,947
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	10,185	6,176
OTHER EASTERN SOFTWOODS	637	512
TOTAL SOFTWOODS	415,372	463,635
HARDWOOD:		
SELECT WHITE AND RED OAKS	105,494	70,945
OTHER WHITE AND RED OAKS	108,359	83,028
HICKORY	15,128	17,106
YELLOW BIRCH	--	--
HARD MAPLE	52	--
SWEETGUM	55,162	48,203
ASH, WALNUT, AND BLACK CHERRY	5,952	1,580
YELLOW-POPLAR	106,269	44,280
TUPELO AND BLACKGUM	13,480	23,509
BAY AND MAGNOLIA	22	--
OTHER EASTERN HARDWOODS	56,549	33,779
TOTAL HARDWOODS	466,467	322,430
ALL SPECIES	881,839	786,065

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	25,351	66,500
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	--	--
TOTAL SOFTWOODS	25,351	66,500
HARDWOOD:		
SELECT WHITE AND RED OAKS	1,407	3,333
OTHER WHITE AND RED OAKS	1,861	5,918
HICKORY	914	4,149
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	2,226	5,795
ASH,WALNUT, AND BLACK CHERRY	--	--
YELLOW-POPLAR	728	1,169
TUPELO AND BLACKGUM	1,095	1,843
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	1,780	4,038
TOTAL HARDWOODS	10,011	26,245
ALL SPECIES	35,362	92,745

TABLE 20.--*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	--	--	--	--	--	--	--	--	--	--
OTHER PUBLIC	315,985	102,002	4,823	101,614	107,546	283,118	100,536	4,823	83,521	94,238
FOREST INDUSTRY	1,033,023	567,776	10,940	204,129	250,178	953,827	561,046	10,345	166,118	216,318
FARMER	2,645,975	897,074	27,503	831,317	890,081	2,340,937	884,786	25,961	672,097	758,093
MISCELLANEOUS PRIVATE	2,228,764	786,818	18,711	649,895	773,340	2,001,605	777,925	17,662	528,407	677,611
ALL OWNERSHIPS	6,223,747	2,353,670	61,977	1,786,955	2,021,145	5,579,487	2,324,293	58,791	1,450,143	1,746,260

TABLE 21.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	--	--	--	--	--	--	--	--	--	--
OTHER PUBLIC	437,247	216,897	6,705	103,701	109,944	545,383	157,207	15,611	164,785	207,780
FOREST INDUSTRY	1,642,284	1,199,627	11,873	196,870	233,914	1,388,353	704,933	32,909	270,608	379,903
FARMER	3,632,937	1,979,710	33,722	783,959	835,546	3,735,578	1,216,306	83,235	1,106,408	1,329,629
MISCELLANEOUS PRIVATE	3,104,844	1,723,166	21,446	592,861	767,371	2,809,270	923,706	45,084	755,440	1,085,040
ALL OWNERSHIPS	8,817,312	5,119,400	73,746	1,677,391	1,946,775	8,478,584	3,002,152	176,839	2,297,241	3,002,352

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	--	--	--	--	--	--	--	--	--	--
OTHER PUBLIC	9,769	3,380	166	[illegible]	[illegible]	6,593	4,782	--	853	1,448
FOREST INDUSTRY	48,445	30,352	312	[illegible]	10,147	45,013	31,804	-	4,370	10,044
FARMER	93,098	34,658	841	27,798	29,801	85,868	40,215	1,080	20,604	23,562
MISCELLANEOUS PRIVATE	88,989	33,252	590	25,461	29,686	58,756	33,831	99	12,719	32,108
ALL OWNERSHIPS	240,304	101,642	1,909	53,726	73,027	207,230	110,632	1,185	38,456	57,162

TABLE 23.--NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	--	--	--	--	--	--	--	--	--	--
OTHER PUBLIC	44,239	18,151	1,099	12,341	12,648	28,305	21,741	--	2,601	3,963
FOREST INDUSTRY	141,182	87,742	1,730	20,050	31,660	172,480	129,453	--	12,407	30,620
FARMER	368,521	158,398	4,939	97,347	107,837	337,036	176,096	6,176	76,869	78,095
MISCELLANEOUS PRIVATE	327,897	140,259	3,054	79,478	105,106	248,044	129,657	512	44,964	72,911
ALL OWNERSHIPS	881,839	404,550	10,822	209,216	257,251	786,065	456,947	6,688	136,841	185,589

TABLE 24.--AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER TIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1976

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	4,241	1,268	--	--	5,848	1,828	3,353	1,007	5,184	1,483	4,145	1,323
HARDWOOD	555	247	--	--	766	318	381	176	804	323	802	352
TOTAL	4,796	1,515	--	--	6,614	2,146	3,734	1,183	5,988	1,806	4,947	1,675
OTHER TIMBER:												
SOFTWOOD		14	--		--	32	--	12	--	15	--	14
HARDWOOD	--	51	--	--	--	10	--	44	--	66	--	50
TOTAL	--	65	--	--	--	42	--	56	--	81	--	64
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	2,233	602	--	--	3,975	892	1,800	514	2,282	606	2,236	608
HARDWOOD	1,478	659	--	--	2,360	946	1,240	487	1,735	720	1,214	636
TOTAL	3,711	1,261	--	--	6,335	1,838	3,040	1,001	3,987	1,326	3,450	1,244
OTHER TIMBER:												
SOFTWOOD	--	9	--	--	--	--	--	3	--	15	-	5
HARDWOOD	--	117	--	--	--	165	--	84	--	147	--	94
TOTAL	--	126	--	--	--	165	-	87	--	162	--	99
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	548	142	--	--	1,036	205	537	139	547	145	497	130
HARDWOOD	3,345	1,150	--	--	5,146	1,507	3,599	1,177	3,174	1,092	3,305	1,179
TOTAL	3,893	1,292	--	--	6,182	1,712	4,136	1,316	3,721	1,238	3,802	1,309
OTHER TIMBER:												
SOFTWOOD	--	4	--	--	--	5	--	4	--	3	--	5
HARDWOOD	--	176	--	--	--	99	--	149	--	188	--	174
TOTAL	--	180	--	--	--	104	--	153	--	191	--	179
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	1,003	212	--	--	942	204	1,347	244	1,065	218	839	196
HARDWOOD	4,400	1,399	--	--	6,709	1,821	5,441	1,678	4,133	1,323	4,082	1,345
TOTAL	5,403	1,611	--	--	7,651	2,025	6,788	1,922	5,198	1,541	4,921	1,541
OTHER TIMBER:												
SOFTWOOD	--	6	--	--	--	--	--	10	--	8	--	3
HARDWOOD	--	427	--	--	--	864	--	426	--	401	--	397
TOTAL	--	433	--	--	--	864	--	436	--	409	--	400
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	2,091	595	--	--	2,639	701	2,510	736	2,015	554	1,894	585
HARDWOOD	2,229	798	--	--	3,903	1,193	1,390	482	2,467	870	2,234	842
TOTAL	4,320	1,393	--	--	6,542	1,894	3,900	1,218	4,482	1,424	4,128	1,397
OTHER TIMBER:												
SOFTWOOD	--	8	--	--	--	10	--	9	--	9	--	7
HARDWOOD	--	153	--	--	--	309	--	93	--	171	--	152
TOTAL	--	161	--	--	--	319	--	102	--	180	--	159
ALL TIMBER	4,320	1,554	--	--	6,542	2,103	3,900	1,321	4,482	1,604	4,128	1,556

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1956, 1966, AND 1976

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1966-1976
	1956	1966	1976	
	ACRES			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	2,319,100	2,025,327	2,024,058	- 1,269
HARDWOOD TYPES	1,748,000	2,053,964	1,979,481	- 74,483
TOTAL	4,067,100	4,079,291	4,003,539	- 75,752
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	15,500	13,400	69,056	+ 55,656
UNPRODUCTIVE	33,400	6,707	2,739	- 3,968
TOTAL	48,900	20,107	71,795	+ 51,688
NONFOREST LAND:				
CROPLAND	1,444,200	1,305,319	1,190,864	-114,455
PASTURE AND RANGE	153,600	155,855	147,676	- 8,179
OTHER	574,900	711,222	831,048	+119,826
TOTAL	2,172,700	2,172,396	2,169,588	- 2,808
ALL LAND[1]	6,288,700	6,271,794	6,244,922	- 26,872

[1] EXCLUDES ALL WATER AREAS.

TABLE 26. - VOLUME OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
					SAWTIMBER (M THOUSAND BOARD FEET)						
SOFTWOOD	1956	8,571,621	--	--	1,834,889	2,148,474	1,820,947	1,163,482	759,271	439,851	404,707
	1966	8,543,170	-	-	1,669,298	1,926,915	1,811,[illegible]	1,307,225	878,055	523,771	437,638
	1976	8,372,130	-	-	1,483,358	1,969,654	1,740,1[illegible]	1,[illegible]6,754	858,680	471,049	472,508
HARDWOOD	1956	6,050,307	--	--	--	1,520,133	1,[illegible],619	1,485,676	1,077,178	684,219	1,559,482
	1966	8,148,909	--	-	-	1,581,634	1,689,[illegible]26	1,471,550	1,124,505	713,668	1,669,356
	1976	8,493,759	--	-	-	1,717,426	1,[illegible]36,740	1,348,224	1,050,820	843,607	1,656,942
					GROWING STOCK (M THOUSAND CUBIC FEET)						
SOFTWOOD	1956	2,636,650	296,614	492,780	519,946	489,179	3[illegible]2,594	211,889	129,458	71,602	62,590
	1966	2,420,528	213,771	395,944	473,022	4[illegible],353	3[illegible],875	[illegible]34,067	149,370	85,263	67,683
	1976	2,383,084	252,491	368,446	420,318	448,481	3[illegible],803	[illegible]30,711	146,396	76,684	73,074
HARDWOOD	1956	1,8[illegible],724	225,094	350,829	409,806	491,[illegible]78	4[illegible],791	3[illegible],188	204,693	135,061	280,180
	1966	1,9[illegible],085	265,725	369,508	439,217	4[illegible],801	4[illegible],501	3[illegible],018	234,565	140,874	281,954
	1976	2,1[illegible],405	274,344	393,536	470,038	5[illegible],[illegible]45	4[illegible],711	3[illegible],233	260,897	166,528	297,708
					ALL LIVE TIMBER (M THOUSAND CUBIC FEET)						
SOFTWOOD	1956	[illegible],674,960	307,339	504,310	526,583	493,[illegible]96	3[illegible]4,478	213,821	129,850	71,878	64,445
	1966	2,452,868	221,502	405,107	479,060	442,383	3[illegible]0,738	2[illegible]9,076	149,831	85,624	69,647
	1976	2,415,647	261,563	376,884	425,813	452,290	3[illegible]48,[illegible]19	2[illegible]31,228	146,860	77,004	75,236
HARDWOOD	1956	3,403,081	326,763	463,865	520,188	517,315	4[illegible],041	364,563	245,808	153,232	339,306
	1966	3,[illegible],488	385,746	488,560	531,572	537,899	4[illegible],636	361,111	256,612	159,827	341,528
	1976	3,808,100	397,691	520,024	568,858	584,274	5[illegible],334	379,967	285,414	188,926	360,607

1/ TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Cost, Noel D.
1976. Forest statistics for the Coastal Plain of Virginia, 1976. USDA For. Serv. Resour. Bull. SE-34, 33 p. Southeast. For. Exp. Stn., Asheville, N. C.

Between 1966 and 1976, area of commercial forest land declined by almost 2 percent--4.0 million acres--in this 34-county area. Of the 300,000 acres that were artificially regenerated, 42 percent were on private, nonindustrial lands. Volume of softwood growing stock (mainly pine) decreased 2 percent, compared to an 8-percent decrease between 1956 and 1966. Total volume of hardwood growing stock increased 8 percent. In 1975, hardwoods accounted for most of the surplus growth over removals. Since the previous survey, softwood removals decreased by 14 percent, and hardwood removals increased 2 percent. About 72 percent of the mortality was pine; the pine bark beetle was the leading identifiable cause of death.

Keywords: Forest trends, commercial forest land, forest ownership, timber volume, timber growth, timber removals.

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Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

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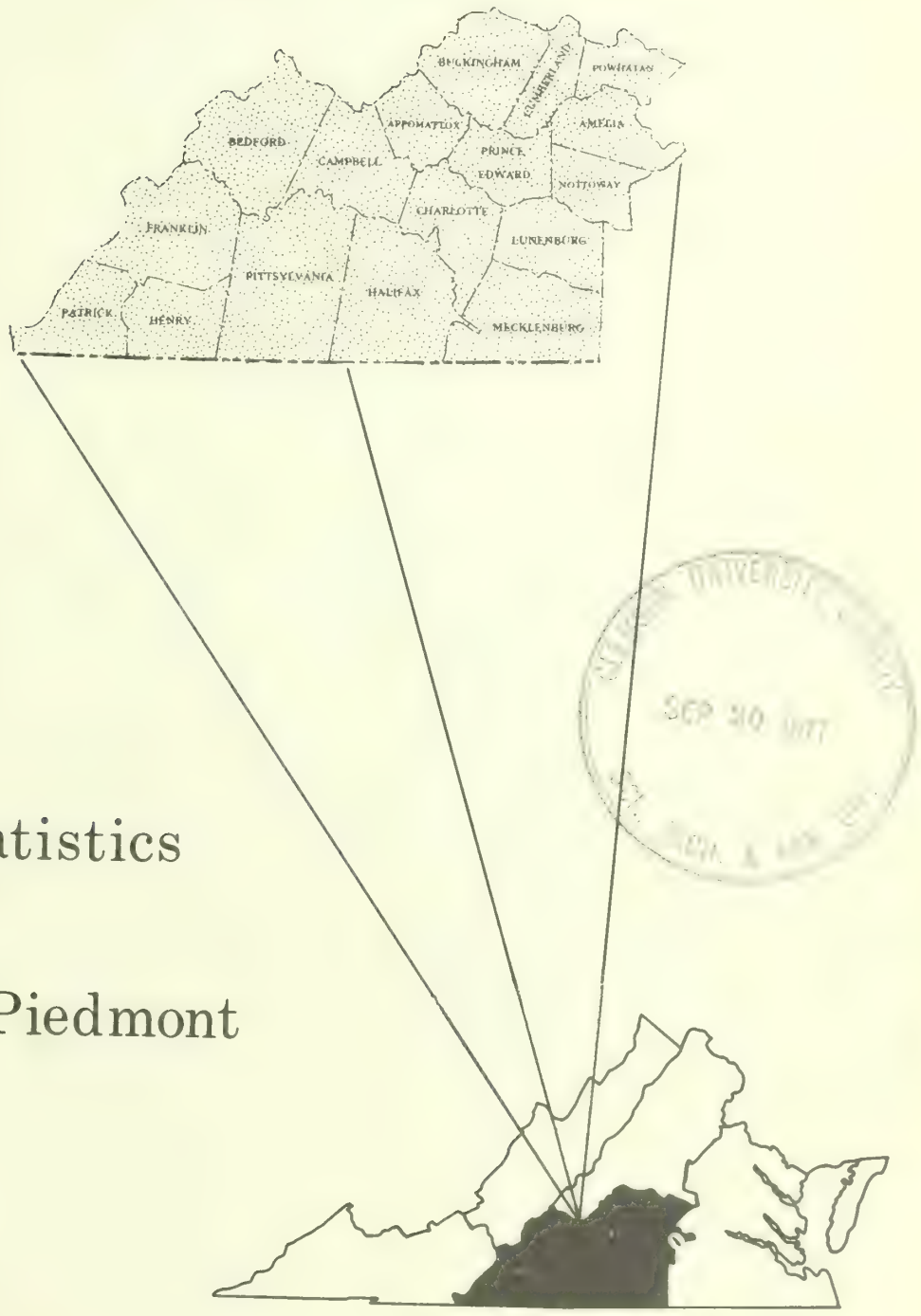

SEP 30 1977

Forest Statistics for the Southern Piedmont of Virginia 1976

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Southern Piedmont of Virginia. The inventory was started in November 1975 and completed in March 1976. Three previous inventories, completed in 1940, 1957, and 1965, provide statistics for measuring changes and trends over the past 36 years. In this report, the primary emphasis is on the changes and trends since 1965. Previously reported figures have been adjusted to provide the best estimate of real change.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, as amended, and by the Forest and Rangeland Renewable Resources Planning Act of 1974, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 17-county area covered by this report is one of five survey units in Virginia. A similar report, USDA Forest Service Resource Bulletin SE-34, has been issued for the Coastal Plain of Virginia. Comparable reports for the other three units will be issued as the Statewide inventory progresses. When completed, this inventory will provide updated statistics on the timber resource for all of Virginia.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Virginia Division of Forestry. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics for the Southern Piedmont of Virginia

by

Raymond M. Sheffield, Assistant Mensurationist

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HIGHLIGHTS

Since 1965 in the Southern Piedmont of Virginia--

--area of commercial forest has decreased by 11,000 acres, or less than 1 percent. This decline reverses a trend of increasing forest acreage found in two previous surveys, and is attributed to a decreased rate of retirement and subsequent reversion of farmland to forest. Some 97,000 acres of commercial forest land were diverted to other land uses, while 86,000 acres of new forest were added. About 59 percent of the diversion was to agricultural uses, largely pasture; most of the remainder went to urban development. The area of commercial forest now totals 3.8 million acres, or 67 percent of all land in this 17-county area.

--area of commercial forest land owned and leased by forest industry has increased by nearly one-third and now totals 583,000 acres. Farmer-owned woodlands decreased by 149,000 acres, or 7 percent, which is a slower rate of decline than found during the previous survey. Land clearing accounted for 39 percent of this decrease, with shifts in ownership accounting for the remainder. The area of forest land owned by the miscellaneous, private group was essentially unchanged, while that owned by the public increased by 16 percent. Private, nonindustrial owners hold 3.0 million acres, or 81 percent of all commercial forest land; public ownerships account for 4 percent of the total.

--area occupied by sawtimber stands has increased by 39 percent. Poletimber stands have decreased slightly in area, while sapling-seedling stands have decreased by 22 percent. Most of this decrease was on lands owned by farmers and miscellaneous, private groups, indicating that many stands which were established on lands formerly used for agricultural purposes have grown to poletimber size.

--about 39 percent of the area remaining in commercial forest land has been treated or significantly disturbed. Harvesting has taken place on 650,000 acres, with nearly 141,000 of these acres subsequently artificially regenerated. Altogether, nearly 179,000 acres have been artificially regenerated since 1965. Almost 46 percent of this artificial regeneration was on lands held by private, nonindustrial owners; the remainder occurred on lands owned and leased by forest industry. An additional 464,000 acres have undergone some form of intermediate cutting. In addition to the area treated or disturbed by man, over 157,000 acres, or 4 percent of the commercial forest area, have experienced significant natural disturbances.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 51 to 63 square feet per acre of commercial forest land. In addition, there are 703 saplings per acre, compared to 674 per acre in 1965. Only 3 acres out of 10 are fully stocked, however; and 719,000 acres, or 19 percent of all stands, are less than 60 percent stocked with growing-stock trees. Thus, current net growth could be substantially increased.

--volume of softwood growing stock has increased from 1.2 to 1.4 billion cubic feet, or by 22 percent. This reversal of past trends is attributed to a slight reduction in softwood removals and to growth of young pine stands on lands formerly used for agriculture. Softwood volume increased substantially across all diameter classes, with most of the gains occurring in Virginia pine and loblolly pine. Virginia pine has replaced shortleaf pine as the region's most abundant softwood species; shortleaf pine volume decreased by 12 percent. The volume of softwood sawtimber increased from 2.3 to nearly 3.0 billion board feet, or by 31 percent.

--volume of hardwood growing stock has increased from 2.2 to 2.8 billion cubic feet, or by nearly 29 percent. This increase is higher than that found during the previous survey. Volume increased across the entire range of diameter classes, with almost all major species of this region registering significant gains. Two exceptions were blackgum and ash, which declined in volume by 9 and 3 percent, respectively. Yellow-poplar registered the most significant gain--increasing by 68 percent--and has now surpassed the white oaks as the region's most abundant hardwood species. Hardwood sawtimber volume totaled 6.8 billion board feet, an increase of 40 percent since 1965.

In 1975--

--net growth of growing stock averaged 57 cubic feet per acre of commercial forest and totaled 215 million cubic feet. Ingrowth accounted for 23 percent of the net growth. Net growth on softwoods accounted for 35 percent of total net growth, and exceeded removals by 30 percent. Net growth on hardwoods accounted for 65 percent of the total, and exceeded removals by almost 87 percent. The net annual growth of sawtimber for all species included 650 million board feet.

--removals of growing stock totaled 133 million cubic feet and included 386 million board feet of sawtimber. Softwood removals have fluctuated considerably since the previous survey, beginning with a gradual decrease after 1965. This decrease, an apparent response to the overcut identified in the last survey, continued until recent years, when softwood removals have increased. The recent increase is partially attributable to the considerable salvage of stands damaged by pine bark beetles. Hardwood removals have increased by nearly 16 percent. Softwoods still provide a disproportionate share of removals. They make up 34 percent of the inventory and 35 percent of net growth, but provide 43 percent of the removals.

--mortality of growing stock totaled 32 million cubic feet and included 62 million board feet of sawtimber. Softwoods accounted for 62 percent of the mortality, which reduced gross growth of growing stock by 13 percent. Insects (primarily pine bark beetles) killed softwood trees containing an estimated 8.8 million cubic feet. Other leading identifiable causes of death were suppression and weather. Only 2 percent of the mortality was attributed to fire. Almost one-half of the softwood mortality was still standing and classified as salvable at the time the survey was made.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 19,323 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 1,457 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classification were based on measurements recorded at 950 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees in the Southern Piedmont of Virginia, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 32 active cutting operations. These data will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 1,002 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land - - - -	0.87
Per billion cubic feet of growing stock - - - - - - -	4.81
Per billion cubic feet of net annual growth - - - - -	1.22
Per billion cubic feet of annual removals - - - - - -	2.46

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
AMELIA	1.37	11.44	11.50	27.03
APPOMATTOX	2.48	13.77	14.45	41.18
BEDFORD	1.59	8.28	9.36	23.58
BUCKINGHAM	1.42	10.35	12.67	18.44
CAMPBELL	1.93	9.09	9.12	31.19
CHARLOTTE	1.62	9.11	13.00	30.06
CUMBERLAND	2.84	15.10	15.94	33.28
FRANKLIN	1.76	7.14	7.80	30.13
HALIFAX	1.54	7.79	8.96	23.80
HENRY	2.21	13.78	14.73	31.02
LUNENBURG	2.04	9.64	10.90	20.92
MECKLENBURG	1.99	7.67	9.00	31.51
NOTTOWAY	2.51	13.60	16.93	25.59
PATRICK	1.10	7.59	9.31	30.64
PITTSYLVANIA	1.54	7.38	7.14	20.99
POWHATAN	2.05	9.76	9.09	39.82
PRINCE EDWARD	1.53	11.62	10.11	26.31
UNIT TOTAL	0.45	2.35	2.64	6.75

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods)

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to pole-timber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtim-ber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.6	61.0	68.2	60.0
8	68.4	68.1	76.0	68.4
10	73.3	73.1	81.4	73.4
12	76.6	76.7	85.2	76.4
14	78.7	79.4	88.2	78.4
16	80.1	81.6	90.4	79.8
18	81.2	83.3	92.3	80.8
20	82.0	84.8	93.8	81.5
22	82.5	86.0	95.1	82.1
24+	83.3	87.3	96.8	83.1
AVERAGE	72.5	69.9	80.9	73.5

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1976*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
AMELIA	233,911	170,920	170,791	--	129	62,991
APPOMATTOX	220,800	155,561	154,961	--	600	65,239
BEDFORD	493,263	297,686	292,451	--	5,235	195,577
BUCKINGHAM	372,480	298,646	298,646	--	--	73,834
CAMPBELL	352,339	222,295	222,295	--	--	130,044
CHARLOTTE	301,259	207,387	207,387	--	--	93,872
CUMBERLAND	186,880	132,352	132,352	--	--	54,528
FRANKLIN	452,769	295,868	294,675	--	1,193	156,901
HALIFAX	513,824	336,888	336,266	--	622	176,936
HENRY	251,857	171,834	170,457	--	1,377	80,023
LUNENBURG	283,520	211,760	211,760	--	--	71,760
MECKLENBURG	407,136	249,169	246,513	--	2,656	157,967
NOTTOWAY	197,120	137,206	137,206	--	--	59,914
PATRICK	299,196	226,264	220,037	--	6,227	72,932
PITTSYLVANIA	656,378	392,910	392,910	--	--	263,468
POWHATAN	173,853	126,358	126,358	--	--	47,495
PRINCE EDWARD	228,480	163,327	163,327	--	--	65,153
TOTAL	5,625,065	3,796,431	3,778,392	--	18,039	1,828,634

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 47,103 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2. --*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1976*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY[1]	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
AMELIA	170,791	--	--	1,308	80	45,581	83,880	3,994	35,948
APPOMATTOX	154,961	--	--	9,396	80	41,201	49,876	9,068	45,340
BEDFORD	292,451	18,141	--	40	1,968	26,459	154,643	15,861	75,339
BUCKINGHAM	298,646	--	--	12,372	--	69,959	93,879	12,245	110,191
CAMPBELL	222,295	--	--	--	438	42,589	87,549	12,507	79,212
CHARLOTTE	207,387	--	1,835	2	137	49,758	121,583	8,385	25,687
CUMBERLAND	132,352	--	--	15,759	--	28,069	65,431	--	23,093
FRANKLIN	294,675	--	2,554	--	235	14,849	159,979	--	117,058
HALIFAX	336,266	--	10,218	30	140	35,154	244,967	4,930	40,827
HENRY	170,457	--	893	40	350	16,895	57,713	1,338	93,228
LUNENBURG	211,760	--	--	--	470	51,607	88,085	10,163	61,435
MECKLENBURG	246,513	--	23,682	579	223	24,311	160,668	--	37,050
NOTTOWAY	137,206	--	14,199	20	55	25,182	63,750	--	34,000
PATRICK	220,037	--	2,842	4,870	3,650	11,124	116,202	7,746	73,603
PITTSYLVANIA	392,910	--	--	1,752	721	48,334	277,574	18,905	45,624
POWHATAN	126,358	--	--	5,286	--	17,004	47,697	4,336	52,035
PRINCE EDWARD	163,327	--	--	9,413	844	22,943	79,756	--	50,371
TOTAL	3,778,392	18,141	56,223	60,867	9,391	571,019	1,953,232	109,478	1,000,041

[1]NOT INCLUDING 11,935 ACRES OF FARMER-OWNED AND MISCELLANEOUS PRIVATE LANDS LEASED TO FOREST INDUSTRY.

TABLE 3. -AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1976

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
AMELIA	170,791	--	--	--	67,505	7,988	87,798	--	7,500	--
APPOMATTOX	154,961	--	--		49,069	7,968	86,856	--	9,068	--
BEDFORD	292,451	--	--	--	44,943	25,116	222,392	--	--	--
BUCKINGHAM	298,646	--	--		79,821	32,784	173,763	4,081	8,197	--
CAMPBELL	222,295	--	--	--	62,050	10,647	145,429	--	4,169	--
CHARLOTTE	207,387	--	--	--	83,999	33,707	77,834	--	11,847	--
CUMBERLAND	132,352	--	--	--	42,389	10,849	71,417	--	7,697	--
FRANKLIN	294,675	3,902	--	--	49,966	57,181	183,391	--	235	--
HALIFAX	336,266	--	--	--	125,854	44,540	135,188	2,555	28,129	--
HENRY	170,467	4,440	--	--	66,253	33,892	61,432	--	4,440	--
LUNENBURG	211,760	--	--	--	71,861	21,633	105,756	--	12,510	--
MECKLENBURG	246,513	--	--	--	64,438	19,066	158,992	--	4,017	--
NOTTOWAY	137,206	--	--	--	61,890	14,795	47,771	--	12,750	--
PATRICK	280,037	3,873	--	--	13,890	38,496	163,778	--	--	--
PITTSYLVANIA	492,910	--	--	--	104,015	53,235	205,239	3,802	26,619	--
POWHATAN	146,358	--	--	--	29,992	7,171	77,689	--	11,506	--
PRINCE EDWARD	183,327	--	--	--	54,702	16,418	78,769	--	13,438	--
TOTAL	3,708,392	12,215	--	--	1,072,637	435,486	2,085,494	10,438	162,122	--

TABLE 4.--*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1976*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
AMELIA	170,791	73,938	42,961	53,892	--
APPOMATTOX	154,961	56,049	53,440	40,938	4,534
BEDFORD	292,451	96,126	126,272	62,123	7,930
BUCKINGHAM	298,646	78,731	101,286	114,514	4,115
CAMPBELL	222,295	57,879	110,703	49,544	4,169
CHARLOTTE	207,387	48,484	108,791	50,112	--
CUMBERLAND	132,352	22,078	49,709	60,565	--
FRANKLIN	294,675	109,252	134,463	42,921	8,039
HALIFAX	336,266	90,070	140,463	98,656	7,077
HENRY	170,457	54,612	52,933	62,912	--
LUNENBURG	211,760	54,469	83,087	74,204	--
MECKLENBURG	246,513	56,594	117,619	65,285	7,015
NOTTOWAY	137,206	56,235	28,085	52,886	--
PATRICK	220,037	82,521	98,781	34,861	3,874
PITTSYLVANIA	392,910	124,592	177,820	82,893	7,605
POWHATAN	126,358	33,187	62,987	25,848	4,336
PRINCE EDWARD	163,327	45,052	62,727	55,548	--
TOTAL	3,778,392	1,139,869	1,552,127	1,027,702	58,694

TABLE 5.--*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1976*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
AMELIA	170,791	--	3,994	19,483	143,808	3,506
APPOMATTOX	154,961	--	--	28,437	94,786	31,738
BEDFORD	292,451	--	6,611	64,769	179,132	41,939
BUCKINGHAM	298,646	--	--	12,245	226,102	60,299
CAMPBELL	222,295	--	8,338	13,661	146,099	54,197
CHARLOTTE	207,387	--	4,192	16,039	176,797	10,359
CUMBERLAND	132,352	--	3,152	--	121,503	7,697
FRANKLIN	294,675	--	3,902	50,725	158,109	81,939
HALIFAX	336,266	--	--	34,942	259,506	41,818
HENRY	170,457	--	--	38,333	99,857	32,267
LUNENBURG	211,760	--	--	15,898	178,924	16,938
MECKLENBURG	246,513	--	--	12,051	196,157	38,305
NOTTOWAY	137,206	--	--	8,500	111,706	17,000
PATRICK	220,037	--	--	34,532	119,672	65,833
PITTSYLVANIA	392,910	--	--	59,275	293,374	40,261
POWHATAN	126,358	--	--	17,344	94,865	14,149
PRINCE EDWARD	163,327	--	--	12,593	150,734	--
TOTAL	3,778,392	--	30,189	438,827	2,751,131	558,245

TABLE 6.--AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING STOCK TREES, BY COUNTY, 1976

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
AMELIA	170,791	18,995	50,462	88,451	12,883	--
APPOMATTOX	154,961	--	59,239	52,583	38,605	4,534
BEDFORD	292,451	6,611	42,297	157,620	77,993	7,930
BUCKINGHAM	298,646	--	71,661	161,412	61,458	4,115
CAMPBELL	222,295	--	50,479	137,310	30,337	4,169
CHARLOTTE	207,387	8,384	83,633	86,387	28,983	--
CUMBERLAND	132,352	--	25,229	81,575	25,548	--
FRANKLIN	294,675	--	54,628	185,186	46,822	8,039
HALIFAX	336,266	3,712	114,931	191,989	18,557	7,077
HENRY	170,457	4,439	53,277	66,303	46,438	--
LUNENBURG	211,760	--	70,368	96,618	44,774	--
MECKLENBURG	246,513	4,017	91,710	121,708	22,063	7,015
NOTTOWAY	137,206	--	63,935	45,404	27,867	--
PATRICK	220,037	--	23,242	102,411	90,510	3,874
PITTSYLVANIA	392,910	9,845	138,130	176,493	60,837	7,605
POWHATAN	126,358	--	32,997	76,187	12,838	4,336
PRINCE EDWARD	163,327	--	58,903	90,987	13,437	--
TOTAL	3,778,392	56,003	1,085,121	1,918,624	659,950	58,694

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 1. - VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET				
AMELIA	678,004	190,796	--	192,768	294,440	242,981	82,198	366	55,449	104,968
APPOMATTOX	349,520	90,036	1,006	61,424	197,054	154,176	44,587	962	23,948	84,679
BEDFORD	777,085	154,610	13,344	267,718	341,413	326,844	91,431	3,041	95,455	136,917
BUCKINGHAM	612,869	123,736	1,002	99,136	388,995	264,325	68,399	1,005	37,764	157,157
CAMPBELL	496,740	104,618	--	112,361	279,761	227,649	64,266	188	42,017	121,178
CHARLOTTE	618,273	229,857	--	158,053	230,863	274,786	122,740	1,617	57,022	93,407
CUMBERLAND	214,542	66,204	--	44,237	104,101	106,368	37,215	448	22,966	45,739
FRANKLIN	843,529	139,543	127,304	269,052	315,633	342,365	62,715	30,388	110,072	139,190
HALIFAX	860,718	316,233	1,516	237,901	305,068	378,931	143,309	3,523	94,583	137,516
HENRY	387,326	199,659	12,631	65,840	113,196	180,007	98,176	6,778	28,614	46,439
LUNENBURG	502,109	157,754	--	132,714	211,641	219,568	71,648	1,585	59,882	86,453
MECKLENBURG	682,583	204,242	1,089	193,242	264,010	296,595	94,538	940	77,672	123,445
NOTTOWAY	487,801	241,606	--	100,948	125,347	162,822	80,999	165	34,759	46,899
PATRICK	499,187	39,718	61,057	157,042	241,770	208,916	27,450	17,545	70,215	93,706
PITTSYLVANIA	1,130,718	388,834	6,356	381,590	353,938	469,735	164,569	3,349	137,992	163,825
POWHATAN	365,552	58,581	--	114,580	192,391	157,394	35,690	736	44,962	76,006
PRINCE EDWARD	349,421	56,912	2,486	104,466	185,557	168,099	41,050	1,556	45,849	79,644
TOTAL	9,815,977	2,758,936	227,791	2,684,072	4,145,178	4,181,561	1,330,980	74,192	1,039,221	1,737,168

FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
AMELIA	40,928	14,698	--	9,531	16,699	12,787	5,633	13	2,452	4,689
APPOMATTOX	19,930	4,015	32	4,181	11,702	7,808	2,109	28	1,564	4,107
BEDFORD	52,401	13,946	430	20,307	17,718	16,326	3,877	93	5,473	6,883
BUCKINGHAM	34,872	7,355	30	6,212	21,275	14,486	5,764	32	2,019	6,671
CAMPBELL	34,454	6,621	--	9,072	18,761	10,670	3,302	24	2,061	5,283
CHARLOTTE	45,655	17,800	--	12,202	15,653	14,504	7,556	100	2,712	4,136
CUMBERLAND	13,985	4,702	--	3,759	5,524	5,377	1,753	10	1,397	2,217
FRANKLIN	63,581	7,935	6,108	27,873	21,665	17,962	2,912	1,291	7,013	6,746
HALIFAX	53,075	14,385	358	16,565	21,767	19,593	7,004	270	5,898	6,421
HENRY	26,816	12,034	1,059	6,218	7,505	9,939	4,241	712	2,255	2,731
LUNENBURG	33,548	9,881	97	10,734	12,836	10,229	3,293	57	3,195	3,684
MECKLENBURG	46,197	14,652	62	12,196	19,287	15,614	4,501	125	4,194	6,794
NOTTOWAY	28,121	15,745	--	4,484	7,892	8,959	5,543	7	1,412	1,997
PATRICK	42,108	3,244	3,914	20,563	14,387	12,522	2,114	843	5,161	4,404
PITTSYLVANIA	64,299	19,422	136	25,315	19,426	21,788	6,044	89	7,812	7,843
POWHATAN	26,054	3,599	355	7,978	14,122	7,319	2,300	13	2,013	2,993
PRINCE EDWARD	23,688	4,613	77	8,359	10,639	9,147	2,687	47	2,623	3,790
TOTAL	649,712	174,647	12,658	205,549	256,858	215,030	70,633	3,754	59,254	81,389

TABLE 9. --*ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
AMELIA	48,665	30,068	--	8,941	9,656	11,887	6,679	--	2,153	3,055
APPOMATTOX	8,714	1,334	--	2,043	5,337	4,143	1,842	--	652	1,649
BEDFORD	16,236	2,508	--	5,388	8,340	6,740	2,066	--	2,052	2,622
BUCKINGHAM	30,655	12,850	--	1,163	16,642	13,872	5,073	--	1,887	6,912
CAMPBELL	11,014	4,273	--	--	6,741	4,608	2,397	--	138	2,073
CHARLOTTE	15,413	4,510	--	5,393	5,510	5,277	1,535	--	1,605	2,137
CUMBERLAND	17,722	3,198	--	8,137	6,387	6,830	2,659	--	2,525	1,646
FRANKLIN	10,862	2,909	1,460	1,272	5,221	4,724	1,161	617	791	2,155
HALIFAX	41,548	22,429	--	5,959	13,160	13,322	7,090	--	2,322	3,910
HENRY	16,894	10,484	--	3,833	2,577	7,554	4,361	--	1,533	1,660
LUNENBURG	39,509	10,820	314	13,383	14,992	11,574	3,599	73	3,528	4,374
MECKLENBURG	19,754	9,194	--	3,664	6,896	7,043	3,300	--	1,362	2,381
NOTTOWAY	22,199	8,243	--	6,648	7,308	7,314	3,682	49	1,607	1,976
PATRICK	14,971	5,409	--	5,265	4,297	5,899	2,204	--	2,010	1,685
PITTSYLVANIA	47,928	11,562	--	8,698	27,668	13,143	3,943	--	2,498	6,702
POWHATAN	14,056	9,477	--	799	3,780	3,784	2,458	--	273	1,053
PRINCE EDWARD	10,042	2,859	--	3,808	3,375	4,788	2,609	--	969	1,210
TOTAL	386,182	152,127	1,774	84,394	147,887	132,502	56,658	739	27,905	47,200

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1976*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
	ACRES					
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	12,215	--	--	--	3,873	8,342
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	314,855	--	9,278	145,871	67,100	92,606
SHORTLEAF PINE	220,263	--	14,561	10,937	163,258	31,507
VIRGINIA PINE	504,694	--	20,406	77,435	249,081	157,772
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	28,952	--	2,694	--	22,870	3,388
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	3,873	--	--	--	3,873	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	1,084,852	--	46,939	234,243	510,055	293,615
HARDWOOD TYPES:						
OAK-PINE	435,486	--	15,364	71,760	255,560	92,802
OAK-HICKORY	2,000,933	18,141	57,451	232,497	1,079,199	613,645
CHESTNUT OAK	84,561	--	3,093	2,816	19,453	59,199
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	10,438	--	2,555	--	3,802	4,081
ELM-ASH-COTTONWOOD	162,122	--	1,079	29,703	85,163	46,177
MAPLE-BEECH-BIRCH	--	--	--	--	--	--
TOTAL	2,693,540	18,141	79,542	336,776	1,443,177	815,904
ALL TYPES	3,778,392	18,141	126,481	571,019	1,953,232	1,109,519

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1976*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
NATIONAL FOREST	18,141	--	--	18,141	--	--
OTHER PUBLIC	126,481	--	42,864	62,847	18,382	2,388
FOREST INDUSTRY	571,019	15,701	184,932	247,129	108,421	14,836
FARMER	1,953,232	31,869	534,994	1,012,059	350,430	23,880
MISC. PRIVATE	1,109,519	8,433	322,331	578,448	182,717	17,590
ALL OWNERSHIPS	3,778,392	56,003	1,085,121	1,918,624	659,950	58,694

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1976*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	1,985,785	576,089	40,661	514,454	854,581
UPPER-STEM PORTION	376,008	93,004	6,564	103,880	172,560
TOTAL	2,361,793	669,093	47,225	618,334	1,027,141
POLETIMBER TREES	1,819,768	661,887	26,967	420,887	710,027
ALL GROWING-STOCK TREES	4,181,561	1,330,980	74,192	1,039,221	1,737,168
ROUGH TREES:					
SAWTIMBER-SIZE TREES	170,115	18,401	1,520	63,343	86,851
POLETIMBER-SIZE TREES	326,677	22,297	1,857	119,746	182,777
TOTAL	496,792	40,698	3,377	183,089	269,628
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	44,706	385	--	15,537	28,784
POLETIMBER-SIZE TREES	11,221	156	101	5,324	5,640
TOTAL	55,927	541	101	20,861	34,424
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	4,208	3,591	50	164	403
POLETIMBER-SIZE TREES	6,163	5,486	187	215	275
TOTAL	10,371	9,077	237	379	678
TOTAL, ALL TIMBER	4,744,651	1,381,296	77,907	1,243,550	2,041,898

TABLE 13. --*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	60,724	27,398	17,776	9,570	3,850	1,624	349	112	36	9	--
LOBLOLLY PINE	36,424	21,873	9,210	2,767	1,255	760	401	115	16	27	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	101,571	50,929	30,571	14,269	4,400	1,149	234	--	14	5	--
PITCH PINE	2,409	990	528	391	271	133	62	26	8	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	4,765	1,728	1,017	670	523	425	147	131	77	47	--
EASTERN HEMLOCK	441	274	38	113	--	--	--	9	7	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	5,663	4,115	1,285	168	41	43	11	--	--	--	--
TOTAL SOFTWOODS	211,997	107,307	60,425	27,948	10,340	4,134	1,204	393	158	88	--
HARDWOOD:											
SELECT WHITE OAKS	47,613	17,411	12,006	7,835	4,676	3,177	1,327	665	233	259	24
SELECT RED OAKS	9,988	3,069	2,204	1,488	1,146	856	568	331	166	135	25
CHESTNUT OAK	21,899	7,727	5,462	3,364	2,363	1,659	854	249	138	75	8
OTHER WHITE OAKS	4,707	1,779	1,367	620	491	252	125	27	29	17	--
OTHER RED OAKS	36,739	12,372	8,785	6,707	4,029	2,430	1,325	615	217	232	27
HICKORY	25,081	9,069	6,101	4,749	2,401	1,547	635	380	113	77	9
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	327	261	--	66	--	--	--	--	--	--	--
SOFT MAPLE	19,993	9,272	4,935	2,867	1,151	794	515	203	116	131	9
BEECH	3,831	1,549	722	501	361	240	194	152	52	51	9
SWEETGUM	18,762	8,580	4,689	2,564	1,556	615	376	168	119	91	4
TUPELO AND BLACKGUM	4,710	1,709	1,281	884	436	243	99	17	6	35	--
ASH	3,159	1,105	669	509	551	192	55	33	21	21	3
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	244	--	52	102	52	29	9	--	--	--	--
YELLOW-POPLAR	45,324	14,370	10,087	7,909	6,056	3,561	1,775	894	382	270	20
BAY AND MAGNOLIA	349	157	122	25	18	27	--	--	--	--	--
BLACK CHERRY	656	428	79	32	82	29	--	--	6	--	--
BLACK WALNUT	841	88	283	140	177	75	31	35	12	--	--
SYCAMORE	3,346	769	771	483	575	272	242	107	74	49	4
BLACK LOCUST	3,750	1,189	1,294	737	346	124	41	13	--	6	--
ELM	2,555	1,153	613	300	165	199	68	17	7	27	6
OTHER EASTERN HARDWOODS	7,457	2,954	2,028	1,174	499	490	206	59	14	33	--
TOTAL HARDWOODS	261,331	95,011	63,550	43,056	27,131	16,811	8,445	3,965	1,705	1,509	148
ALL SPECIES	473,328	202,318	123,975	71,004	37,471	20,945	9,649	4,358	1,863	1,597	148

TABLE 14.--*VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	456,511	71,407	121,649	120,589	74,014	45,535	13,663	6,470	2,054	1,130	--
LOBLOLLY PINE	207,847	52,293	55,544	33,006	22,620	20,787	14,946	5,451	935	2,265	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	686,478	160,250	218,302	183,376	84,246	30,999	8,138	--	816	351	--
PITCH PINE	21,383	2,344	2,551	4,003	5,032	3,502	2,034	1,414	503	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	55,179	5,464	6,371	7,137	8,925	9,420	5,200	5,204	4,108	3,350	--
EASTERN HEMLOCK	2,373	771	219	764	--	--	--	328	291	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	20,118	9,536	6,564	1,867	1,110	766	275	--	--	--	--
TOTAL SOFTWOODS	1,449,889	302,065	411,200	350,742	195,947	111,009	44,256	18,867	8,707	7,096	--
HARDWOOD:											
SELECT WHITE OAKS	523,192	52,726	79,032	93,850	89,162	83,584	48,670	30,762	14,710	24,300	6,396
SELECT RED OAKS	154,425	11,823	15,571	20,134	21,082	23,754	20,262	16,368	9,794	11,664	3,973
CHESTNUT OAK	262,559	27,230	40,924	40,871	46,104	42,894	30,145	14,780	8,113	8,123	3,375
OTHER WHITE OAKS	44,397	5,304	8,695	6,670	9,649	6,295	3,940	1,098	1,603	1,143	--
OTHER RED OAKS	419,409	37,963	54,682	74,967	72,053	63,419	47,414	28,372	12,859	22,757	4,923
HICKORY	274,449	27,023	42,041	52,989	46,477	43,348	24,942	19,721	7,635	8,221	2,052
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	2,184	995	--	667	213	309	--	--	--	--	--
SOFT MAPLE	281,931	50,321	51,389	49,758	35,230	28,658	22,805	14,613	12,319	14,253	2,585
BEECH	65,767	5,370	5,675	5,754	10,049	7,412	9,016	9,305	4,388	6,797	2,001
SWEETGUM	179,704	24,936	32,275	34,724	31,562	18,378	13,945	8,318	6,717	7,806	1,043
TUPELO AND BLACKGUM	59,729	9,112	15,802	11,495	9,820	6,345	3,001	809	628	2,717	--
ASH	54,149	7,317	7,970	11,146	12,735	6,149	2,059	2,720	1,624	2,027	402
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	5,177	188	293	1,874	1,199	855	768	--	--	--	--
YELLOW-POPLAR	598,662	49,205	71,278	96,604	119,679	98,635	65,540	44,580	25,580	22,838	4,723
BAY AND MAGNOLIA	4,018	566	940	880	485	896	--	--	--	--	251
BLACK CHERRY	10,360	2,210	2,315	1,393	3,025	671	340	--	406	--	--
BLACK WALNUT	14,971	590	2,794	2,376	3,785	1,634	1,061	1,579	602	550	--
SYCAMORE	61,614	3,579	6,768	6,893	12,525	7,128	9,647	5,179	4,675	4,779	441
BLACK LOCUST	57,415	7,567	13,811	15,598	9,733	5,711	1,589	1,367	838	1,201	--
ELM	34,482	5,234	6,441	5,063	3,768	5,575	2,958	1,548	479	2,580	836
OTHER EASTERN HARDWOODS	175,797	52,353	41,825	28,562	19,853	17,165	8,055	3,546	1,129	3,309	--
TOTAL HARDWOODS	3,284,391	381,612	500,521	562,268	558,188	468,815	316,157	204,665	114,099	145,065	33,001
ALL SPECIES	4,734,280	683,677	911,721	913,010	754,135	579,824	360,413	223,532	122,806	152,161	33,001

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	453,664	70,968	121,272	119,882	73,518	45,535	13,663	5,642	2,054	1,130	--
LOBLOLLY PINE	202,311	49,804	53,859	31,644	22,620	20,787	14,946	5,451	935	2,265	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	654,853	151,476	209,730	173,871	80,969	29,791	7,849	--	816	351	--
PITCH PINE	20,152	2,227	2,551	3,799	4,122	3,502	2,034	1,414	503	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	54,165	5,241	6,151	7,137	8,657	9,420	4,897	5,204	4,108	3,350	--
EASTERN HEMLOCK	2,251	649	219	764	--	--	--	328	291	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	17,776	8,776	5,931	1,676	352	766	275	--	--	--	--
TOTAL SOFTWOODS	1,405,172	289,141	399,713	338,773	190,238	109,801	43,664	18,039	8,707	7,096	--
HARDWOOD:											
SELECT WHITE OAKS	499,421	46,668	75,827	91,551	85,493	82,357	47,541	30,222	13,588	22,064	4,110
SELECT RED OAKS	141,993	9,459	14,090	16,832	20,086	22,696	19,696	15,068	9,590	10,845	3,631
CHESTNUT OAK	211,641	19,928	30,647	34,276	38,014	39,107	25,951	10,387	6,994	4,863	1,474
OTHER WHITE OAKS	40,273	4,233	8,015	6,109	8,063	6,069	3,940	1,098	1,603	1,143	--
OTHER RED OAKS	394,172	32,361	52,251	70,619	69,096	60,573	45,166	27,602	12,150	20,280	4,074
HICKORY	254,996	24,824	36,289	50,015	44,213	41,688	23,740	19,193	6,821	6,869	1,344
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	1,465	798	--	667	--	--	--	--	--	--	--
SOFT MAPLE	170,922	28,056	30,313	31,164	19,002	19,148	17,070	8,624	6,397	9,839	1,309
BEECH	48,856	4,955	4,042	4,431	6,784	6,139	6,802	7,050	3,143	4,122	1,388
SWEETGUM	161,240	18,677	28,845	30,454	30,072	16,877	13,660	8,108	6,553	7,311	683
TUPELO AND BLACKGUM	39,443	3,976	6,936	8,731	7,832	5,771	2,811	809	357	2,220	--
ASH	35,987	3,190	4,055	6,181	10,540	5,203	1,738	1,686	1,314	1,678	402
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	4,173	--	293	1,364	1,199	855	462	--	--	--	--
YELLOW-POPLAR	573,686	42,126	66,460	94,177	117,403	96,516	64,591	43,815	23,487	21,770	3,341
BAY AND MAGNOLIA	2,613	378	718	329	292	896	--	--	--	--	--
BLACK CHERRY	4,447	1,043	512	321	1,494	671	--	--	406	--	--
BLACK WALNUT	10,481	191	1,447	1,199	2,768	1,634	1,061	1,579	602	--	--
SYCAMORE	55,329	2,877	5,684	6,355	11,637	6,833	8,694	4,758	4,290	3,760	441
BLACK LOCUST	29,112	3,374	7,673	7,463	5,618	3,017	1,122	455	--	390	--
ELM	25,290	2,636	3,991	3,554	2,944	4,974	2,365	931	479	2,580	836
OTHER EASTERN HARDWOODS	70,849	10,493	13,274	13,517	9,452	11,377	6,870	2,784	790	2,292	--
TOTAL HARDWOODS	2,776,389	260,243	391,362	479,309	492,002	432,401	293,280	184,169	98,564	122,026	23,033
ALL SPECIES	4,181,561	549,384	791,075	818,082	682,240	542,202	336,944	202,208	107,271	129,122	23,033

TABLE 16.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	1,128,832	442,414	327,009	230,698	75,624	33,055	12,545	7,487	--
LOBLOLLY PINE	448,192	109,384	98,801	105,076	82,298	32,150	5,740	14,743	--
POND PINE	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	1,112,159	599,237	331,934	136,233	38,390	--	4,385	1,980	--
PITCH PINE	69,753	12,323	17,597	17,212	11,082	8,418	3,121	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	207,694	25,566	37,935	45,726	25,673	28,745	23,728	20,321	--
EASTERN HEMLOCK	5,932	2,508	--	--	--	1,745	1,679	--	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	14,165	6,920	1,678	4,051	1,516	--	--	--	--
TOTAL SOFTWOODS	2,986,727	1,198,352	814,954	538,996	234,583	104,113	51,198	44,531	--
HARDWOOD:									
SELECT WHITE OAKS	1,147,836	--	278,269	316,478	203,848	140,415	67,032	117,757	24,037
SELECT RED OAKS	409,878	--	65,101	83,982	80,102	65,039	43,703	52,662	19,289
CHESTNUT OAK	484,108	--	119,119	145,406	107,038	46,488	33,172	24,378	8,507
OTHER WHITE OAKS	93,058	--	29,160	25,628	18,066	5,446	8,408	6,350	--
OTHER RED OAKS	992,233	--	226,436	238,159	197,018	131,613	61,102	112,640	25,265
HICKORY	600,984	--	150,079	167,902	107,328	93,780	35,319	38,250	8,326
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	--	--	--	--	--	--	--	--	--
SOFT MAPLE	327,274	--	59,392	70,934	70,507	38,628	30,484	49,949	7,380
BEECH	138,508	--	24,937	23,363	26,587	28,070	12,706	16,959	5,886
SWEETGUM	370,377	--	106,517	71,769	65,301	42,430	36,282	43,517	4,561
TUPELO AND BLACKGUM	73,941	--	24,289	21,343	11,532	3,616	1,744	11,417	--
ASH	87,884	--	34,456	20,322	7,488	7,787	6,422	9,100	2,309
COTTONWOOD	--	--	--	--	--	--	--	--	--
BASSWOOD	9,670	--	4,298	3,341	2,031	--	--	--	--
YELLOW-POPLAR	1,655,689	--	414,117	412,110	312,676	231,534	131,568	131,074	22,610
BAY AND MAGNOLIA	5,292	--	1,103	4,189	--	--	--	--	--
BLACK CHERRY	9,757	--	5,041	2,692	--	--	2,024	--	--
BLACK WALNUT	26,756	--	9,573	5,698	3,744	5,598	2,143	--	--
SYCAMORE	165,310	--	36,624	25,565	37,086	22,216	21,455	19,748	2,616
BLACK LOCUST	38,026	--	19,649	10,969	4,177	1,719	--	1,512	--
ELM	63,006	--	9,572	19,066	9,972	4,174	2,311	13,355	4,556
OTHER EASTERN HARDWOODS	129,663	--	32,900	42,542	28,101	11,999	3,529	10,592	--
TOTAL HARDWOODS	6,829,250	--	1,650,632	1,711,458	1,292,602	880,552	499,404	659,260	135,342
ALL SPECIES	9,815,977	1,198,352	2,465,586	2,250,454	1,527,185	984,665	550,602	703,791	135,342

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	70,633	56,658
EASTERN WHITE PINE	2,823	617
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	931	122
TOTAL SOFTWOODS	74,387	57,397
HARDWOOD:		
SELECT WHITE AND RED OAKS	31,436	19,521
OTHER WHITE AND RED OAKS	30,324	17,936
HICKORY	8,802	6,717
YELLOW BIRCH	--	--
HARD MAPLE	169	--
SWEETGUM	6,942	3,381
ASH,WALNUT, AND BLACK CHERRY	1,815	1,078
YELLOW-POPLAR	37,488	17,335
TUPELO AND BLACKGUM	1,069	1,271
BAY AND MAGNOLIA	176	--
OTHER EASTERN HARDWOODS	22,422	7,866
TOTAL HARDWOODS	140,643	75,105
ALL SPECIES	215,030	132,502

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	174,647	152,127
EASTERN WHITE PINE	11,257	1,460
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	1,401	314
TOTAL SOFTWOODS	187,305	153,901
HARDWOOD:		
SELECT WHITE AND RED OAKS	104,238	61,904
OTHER WHITE AND RED OAKS	99,318	55,260
HICKORY	29,666	24,461
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	17,019	8,577
ASH,WALNUT, AND BLACK CHERRY	5,899	1,021
YELLOW-POPLAR	150,623	59,496
TUPELO AND BLACKGUM	2,278	2,106
BAY AND MAGNOLIA	811	--
OTHER EASTERN HARDWOODS	52,555	19,456
TOTAL HARDWOODS	462,407	232,281
ALL SPECIES	649,712	386,182

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	19,229	32,614
EASTERN WHITE PINE	--	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	501	408
TOTAL SOFTWOODS	19,730	33,022
HARDWOOD:		
SELECT WHITE AND RED OAKS	2,032	7,432
OTHER WHITE AND RED OAKS	3,876	9,013
HICKORY	1,138	2,855
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	508	688
ASH,WALNUT, AND BLACK CHERRY	352	383
YELLOW-POPLAR	1,222	3,289
TUPELO AND BLACKGUM	130	505
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	2,895	4,969
TOTAL HARDWOODS	12,153	29,134
ALL SPECIES	31,883	62,156

TABLE 20.--*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	17,838	--	202	263	17,373	12,278	--	202	263	11,813
OTHER PUBLIC	248,781	90,690	2,500	57,946	97,645	218,853	88,948	2,378	47,455	80,072
FOREST INDUSTRY	588,803	194,965	3,504	138,769	251,565	519,277	186,478	3,046	113,478	216,275
FARMER	2,566,071	751,970	47,417	718,813	1,047,871	2,289,072	734,496	45,545	608,327	900,704
MISCELLANEOUS PRIVATE	1,312,787	334,594	24,047	327,380	626,766	1,142,081	321,058	23,021	269,698	528,304
ALL OWNERSHIPS	4,734,280	1,372,219	77,670	1,243,171	2,041,220	4,181,561	1,330,980	74,192	1,039,221	1,737,168

TABLE 21.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	10,762	--	594	--	10,168	30,008	--	--	--	30,008
OTHER PUBLIC	313,839	172,211	1,509	50,260	89,859	244,118	39,009	2,235	85,560	117,314
FOREST INDUSTRY	705,334	326,699	3,735	147,227	227,673	459,345	46,259	1,863	169,103	242,120
FARMER	3,316,962	1,413,735	66,749	770,868	1,065,610	2,156,033	178,224	79,974	834,080	1,063,755
MISCELLANEOUS PRIVATE	1,567,495	515,273	51,797	327,363	673,062	1,012,081	67,526	19,335	299,611	625,609
ALL OWNERSHIPS	5,914,392	2,427,918	124,384	1,295,718	2,066,372	3,901,585	331,018	103,407	1,388,354	2,078,806

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22. --*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	476	--	7	17	452	--	--	--	--	--
OTHER PUBLIC	9,847	4,056	104	2,261	3,426	6,490	4,448	--	833	1,209
FOREST INDUSTRY	30,954	14,096	127	5,827	10,904	22,232	8,948	--	4,212	9,072
FARMER	112,691	33,411	2,048	34,914	42,318	69,674	31,906	122	14,359	23,287
MISCELLANEOUS PRIVATE	61,062	19,070	1,468	16,235	24,289	34,106	11,356	617	8,501	13,632
ALL OWNERSHIPS	215,030	70,633	3,754	59,254	81,389	132,502	56,658	739	27,905	47,200

TABLE 23. --*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	1,836	--	32	--	1,804	--	--	--	--	--
OTHER PUBLIC	30,177	12,257	213	6,425	11,282	18,797	10,077	--	4,086	4,634
FOREST INDUSTRY	76,075	24,770	281	20,619	30,405	67,243	30,182	--	10,866	26,195
FARMER	349,040	93,919	7,776	118,961	128,384	214,908	91,109	314	47,238	76,247
MISCELLANEOUS PRIVATE	192,584	43,701	4,356	59,544	84,983	85,234	20,759	1,460	22,204	40,811
ALL OWNERSHIPS	649,712	174,647	12,658	205,549	256,858	386,182	152,127	1,774	84,394	147,887

TABLE 24.--*AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1976*

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,904	966	--	--	2,247	1,081	1,140	669	2,388	1,121	1,512	875
HARDWOOD	231	116	--	--	242	151	103	71	345	151	116	78
TOTAL	2,135	1,082	--	--	2,489	1,232	1,243	740	2,733	1,272	1,628	953
OTHER TIMBER:												
SOFTWOOD	--	27	--	--	--	24	--	26	--	23	--	36
HARDWOOD	--	32	--	--	--	44	--	27	--	33	--	31
TOTAL	--	59	--	--	--	68	--	53	--	56	--	67
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	980	419	--	--	1,413	580	1,057	406	1,001	429	796	377
HARDWOOD	1,106	585	--	--	1,373	705	797	495	1,238	653	930	447
TOTAL	2,086	1,004	--	--	2,786	1,285	1,854	901	2,239	1,082	1,726	824
OTHER TIMBER:												
SOFTWOOD	--	15	--	--	--	20	--	24	--	15	--	7
HARDWOOD	--	103	--	--	--	140	--	55	--	107	--	123
TOTAL	--	118	--	--	--	160	--	79	--	122	--	130
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	240	87	76	26	551	149	306	107	227	84	197	76
HARDWOOD	2,629	1,049	5,152	1,549	2,934	1,063	2,654	1,093	2,669	1,055	2,482	1,016
TOTAL	2,869	1,136	5,228	1,575	3,485	1,212	2,960	1,200	2,896	1,139	2,679	1,092
OTHER TIMBER:												
SOFTWOOD	--	4	--	--	--	--	--	9	--	3	--	5
HARDWOOD	--	184	--	713	--	238	--	176	--	176	--	186
TOTAL	--	188	--	713	--	238	--	185	--	179	--	191
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	83	23	--	--	--	--	143	30	56	13	110	40
HARDWOOD	3,402	1,148	--	--	4,915	1,275	3,806	1,161	3,404	1,162	2,948	1,098
TOTAL	3,485	1,171	--	--	4,915	1,275	3,949	1,191	3,460	1,175	3,058	1,138
OTHER TIMBER:												
SOFTWOOD	--	1	--	--	--	--	--	--	--	--	--	4
HARDWOOD	--	248	--	--	--	183	--	406	--	220	--	222
TOTAL	--	249	--	--	--	183	--	406	--	220	--	226
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	790	372	76	26	1,207	513	717	359	887	398	592	312
HARDWOOD	1,807	735	5,152	1,549	1,925	716	1,489	625	1,905	770	1,744	723
TOTAL	2,597	1,107	5,228	1,575	3,132	1,229	2,206	984	2,792	1,168	2,336	1,035
OTHER TIMBER:												
SOFTWOOD	--	12	--	--	--	11	--	17	--	10	--	13
HARDWOOD	--	134	--	713	--	158	--	115	--	131	--	141
TOTAL	--	146	--	713	--	169	--	132	--	141	--	154
ALL TIMBER	2,597	1,253	5,228	2,288	3,132	1,398	2,206	1,116	2,792	1,309	2,336	1,189

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1957, 1965, AND 1976*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1965-1976
	1957	1965	1976	
	- - - - - - - - - *ACRES* - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	1,711,300	1,609,600	1,520,338	- 89,262
HARDWOOD TYPES	2,036,000	2,180,263	2,258,054	+ 77,791
TOTAL	3,747,300	3,789,863	3,778,392	- 11,471
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	16,000	19,500	18,039	- 1,461
UNPRODUCTIVE	700	910	--	- 910
TOTAL	16,700	20,410	18,039	- 2,371
NONFOREST LAND:				
CROPLAND	1,200,000	862,299	790,551	- 71,748
PASTURE AND RANGE	503,600	648,295	645,284	- 3,011
OTHER	133,700	273,876	345,696	+ 71,820
TOTAL	1,837,300	1,784,470	1,781,531	- 2,939
ALL LAND[1]	5,601,300	5,594,743	5,577,962	- 16,781

[1] EXCLUDES ALL WATER AREAS.

TABLE 26.--*VOLUME OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
			SAWTIMBER (IN THOUSAND BOARD FEET)								
SOFTWOOD	1957	2,321,982	--	--	935,904	665,365	337,562	195,621	80,277	54,114	53,139
	1965	2,288,123	--	--	938,260	645,740	377,458	165,812	96,964	34,028	29,861
	1976	2,986,727	--	--	1,198,352	814,954	538,996	234,583	104,113	51,198	44,531
HARDWOOD	1957	4,632,824	--	--	--	1,223,273	1,136,492	811,346	496,120	350,337	615,256
	1965	4,871,960	--	--	--	1,278,869	1,174,362	872,110	613,154	350,337	583,128
	1976	6,829,250	--	--	--	1,650,632	1,711,458	1,292,602	880,552	499,404	794,602
			GROWING STOCK (IN THOUSAND CUBIC FEET)								
SOFTWOOD	1957	1,241,351	306,396	378,280	264,604	155,314	68,764	36,415	13,908	9,203	8,467
	1965	1,153,853	256,986	345,763	265,270	150,733	76,891	30,866	16,799	5,787	4,758
	1976	1,405,172	289,141	399,713	338,773	190,238	109,801	43,664	18,039	8,707	7,096
HARDWOOD	1957	2,017,481	206,802	320,597	369,004	364,612	287,138	184,104	103,769	69,141	112,314
	1965	2,155,638	253,746	335,350	386,923	381,183	296,706	197,892	128,248	69,141	106,449
	1976	2,776,389	260,243	391,362	479,309	492,002	432,401	293,280	184,169	98,564	145,059
			ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)								
SOFTWOOD	1957	1,281,926	320,410	388,860	274,051	159,984	69,510	36,919	14,522	9,203	8,467
	1965	1,191,258	268,740	355,436	274,733	155,257	77,716	31,278	17,553	5,787	4,758
	1976	1,449,889	302,065	411,200	350,742	195,947	111,009	44,256	18,867	8,707	7,096
HARDWOOD	1957	2,403,287	303,070	410,251	433,169	413,736	311,348	198,458	115,318	80,055	137,882
	1965	2,576,027	371,864	429,125	454,201	432,522	321,736	213,321	142,501	80,055	130,702
	1976	3,284,391	381,612	500,521	562,268	558,188	468,815	316,157	204,665	114,099	178,066

'TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Sheffield, Raymond M.
1976. Forest statistics for the Southern Piedmont of Virginia, 1976. USDA For. Serv. Resour. Bull. SE-35, 33 p. Southeast. For. Exp. Stn., Asheville N.C.

Between 1965 and 1976, area of commercial forest land changed little in this 17-county area. Nearly 179,000 acres were artificially regenerated. The area of commercial forest occupied by sawtimber stands increased by 39 percent. Volume of softwood growing stock increased by 22 percent, and that of hardwood growing stock by 29 percent. Almost all major species registered gains in volume, but shortleaf pine volume decreased by 12 percent. In 1975, annual net growth of growing stock exceeded removals by 82 million cubic feet. Insects (primarily pine bark beetles) killed softwood trees containing an estimated 8.8 million cubic feet in 1975.

Keywords: Forest trends, commercial forest land, forest ownership, timber volume, timber growth, timber removals.

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Asheville, North Carolina

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SDA Forest Service Resource Bulletin SE-36 September 1976

Changes in Output of Industrial Timber Products in Georgia, 1971-1974

by

Richard L. Welch

and

Thomas R. Bellamy

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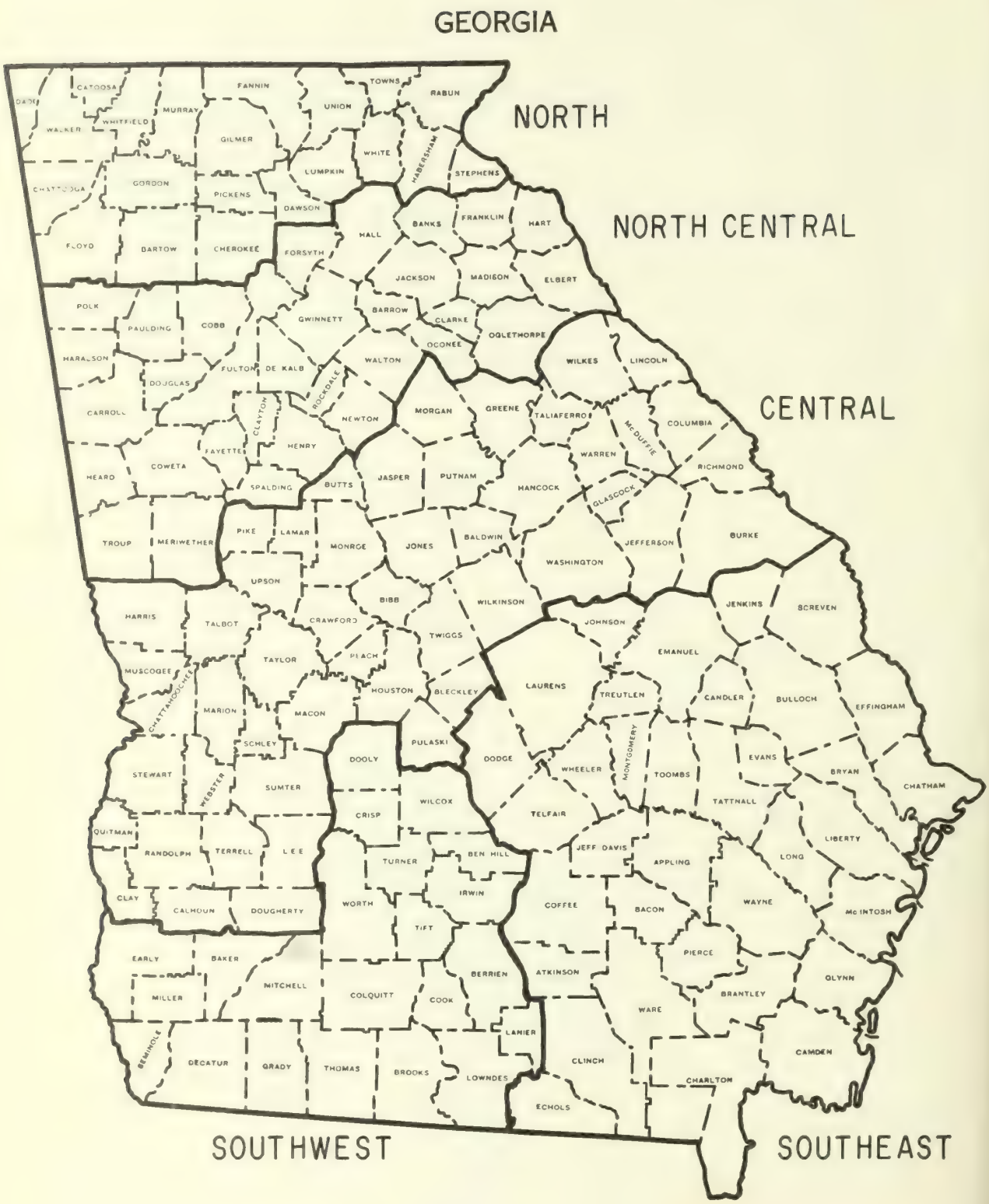

Forest Survey Regions in Georgia.

Changes in Output of Industrial Timber Products in Georgia, 1971-1974

by

Richard L. Welch, Resource Analyst
and
Thomas R. Bellamy, Associate Mensurationist

Abstract.--The total output of industrial timber products in Georgia amounted to almost 986 million cubic feet in 1974, 7 percent more than in 1971. Production of all major roundwood products and plant byproducts from softwood and hardwood species increased. Of the five Forest Survey Regions in the State, the Southeast Region had the largest total output, the Southwest Region had the greatest percentage increase, and the Central Region had the greatest volume increase. The volume of unused plant residues produced in the State declined by 38 percent between 1971 and 1974, and the volume of unused bark dropped by 35 percent.

Keywords: Roundwood products, plant byproducts, softwood products, hardwood products, unused plant residues, roundwood receipts.

Between detailed timber surveys, which are made at 10-year intervals in Southeastern States, the easiest way to keep track of timber cutting in a State is to ask forest industries how much wood they are using and where it is coming from. A mill owner is willing to supply these figures because, when compiled, they help him determine how much wood is available to his mill. This Bulletin reports the principal changes in use of Georgia wood by forest industries between 1971 and 1974.

Since one objective was to learn how much wood was being removed from the State's forests, only primary processing plants were considered. A plant that converts boards from a sawmill into furniture, for example, was classed as a secondary processor and was not considered here. Total use of wood by primary processing plants is here called output of industrial timber products. The data reported were obtained by canvassing all such plants that processed Georgia wood during 1971 and 1974. Output was divided into two components--roundwood products and plant byproducts. The second component consists of those initial residues from primary plants that were used as a roundwood substitute.

In some parts of Georgia, utilization of forests for timber products was much heavier than in others. Output of industrial timber products is therefore reported for regions within the State as well as for Georgia as a whole.

In the Southeast Region, where timber was being harvested almost as rapidly as it was growing in 1971, the roundwood harvest declined. The demand for wood remained high in this region, but many of its plants began getting their roundwood from the Southwest or Central Region or from other States. As a result, output of industrial timber products in the Central and Southwest Regions of Georgia was up.

Output also increased substantially in the North Central Region (the Georgia Piedmont). Part of the increase here was caused by salvage of trees killed by the southern pine beetle.

In the northernmost part of Georgia, there was a decline in numbers of mills and in production of saw logs. Even so, much of the wood processed in the region was obtained from other regions.

STATEWIDE TRENDS

The total output of industrial timber products in Georgia amounted to almost 986 million cubic feet in 1974, 7 percent more than in 1971. Production of saw logs, veneer logs, pulpwood, and plant byproducts from both softwoods and hardwoods increased during this period. Although the number of primary wood-using plants in the State dropped from 368 in 1971 to 366 in 1974 (fig. 1), the total roundwood received by such plants increased slightly--from 828.9 to 829.2 million cubic feet.

The roundwood received from within and outside the State in 1974 was 22 million cubic feet less than the roundwood harvested in Georgia that year. This was a reversal of the situation in 1971, when roundwood receipts exceeded the roundwood harvest by 27 million cubic feet. The downward trend in receipts probably did not develop until 1974. By the end of that year, the number of sawmills in operation had dropped from a maximum of 301 to only 281.

Plant byproducts were increasingly used as a roundwood substitute during the 4-year period. Such byproducts comprised 1 percent more of the total output of timber products in 1974 than in 1971. Over the past 14 years, this trend has resulted in a 68-percent increase in the total supply of Georgia's timber products, while the production of roundwood has increased by only 55 percent.

Although softwoods provided the bulk of Georgia's industrial timber products throughout the 4-year period, the production from hardwoods increased almost 20 percent, while that from softwoods increased only 5 percent. The increase in demand for hardwood products should result in a badly needed improvment in hardwood utilization.

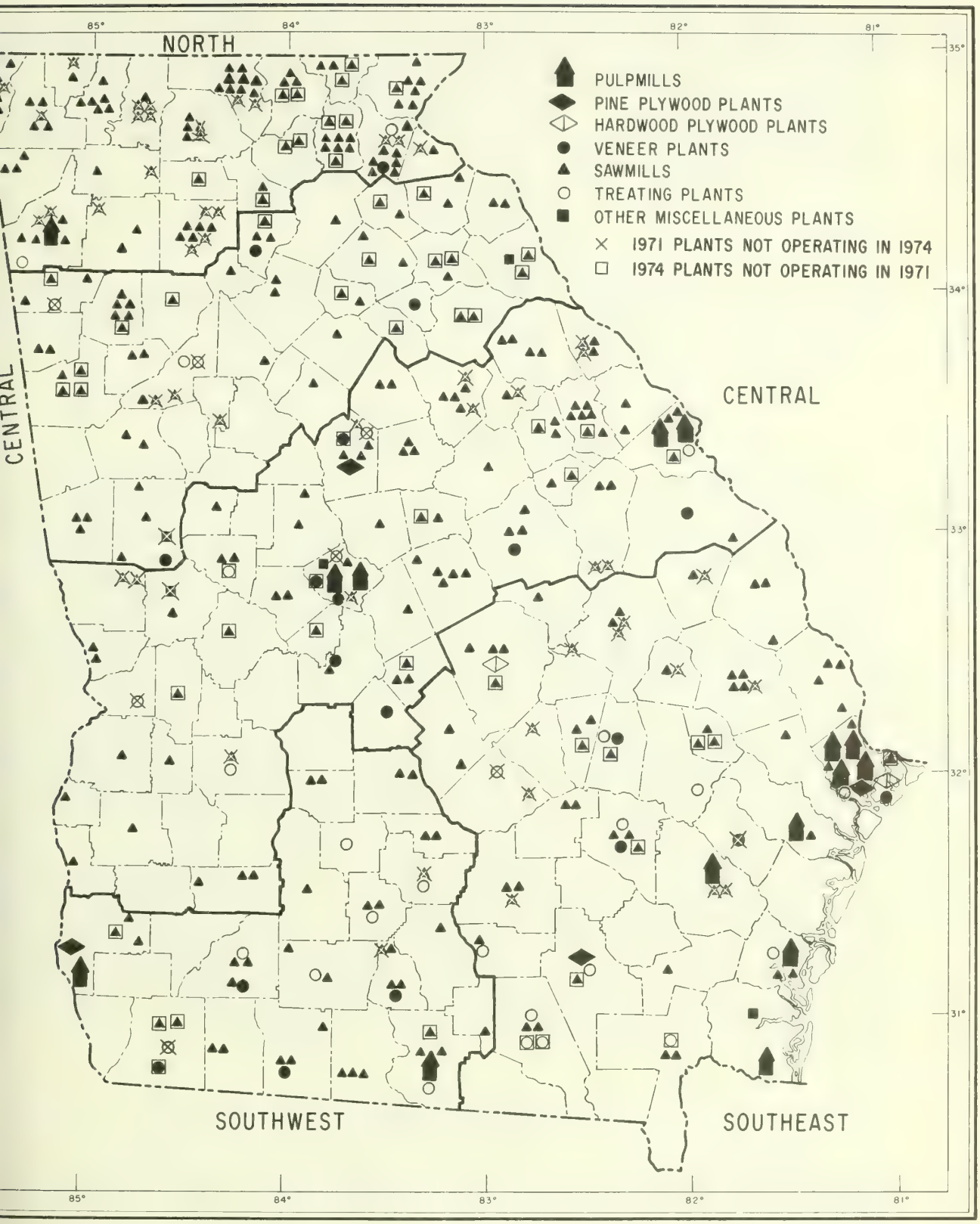

Figure 1.--Location of primary wood-using plants in Georgia, 1974.

The proportions of Georgia's harvest used for the various industrial products changed little between 1971 and 1974. Pulpwood continued to be the leading product, making up over 60 percent of the total output in the latter year. The only decline between 1971 and 1974 was in the use of roundwood for miscellaneous products such as poles, piling, fence posts, and cooperage bolts. Gains in the use of plant byproducts for these miscellaneous products more than offset this reduction in roundwood.

REGIONAL CHANGES

In 1971, serious problems in timber supply existed within several of Georgia's five Survey Regions. As a result, changes have occurred in the sources of wood used and in production by the primary processing plants in some of these regions.

Southeast Region

In 1971 and 1974, the Southeast Region had the largest total output of industrial timber products in the State. Regional production of round softwood, however, dropped by over 6 percent between 1971 and 1974. And in the southernmost portion of the region, roundwood production declined from both softwoods and hardwoods (fig. 2). These declines should help to correct a potential imbalance that existed in the regional timber supply in 1971. At that time, net growth of softwoods exceeded total timber removals of this species group by only 8 percent throughout the region, and in the southernmost portion the total timber removals of both species groups exceeded the net growth by 16 percent.

The decline in production of round softwood was partially offset by a 35-percent increase in the output of plant byproducts and a 12-percent increase in production of round hardwood. The net result of these changes was a decline of less than 1 percent in total output of industrial timber products between 1971 and 1974.

Throughout the 4-year period, the number of primary wood-using plants in the Southeast Region remained at 77, and the demand for timber products from the region remained high. Twelve counties in the region each provided roundwood to 20 or more mills within and beyond their borders (fig. 3). The total roundwood receipts in the region amounted to almost 385 million cubic feet, or 46 percent of the total roundwood receipts in the State. Over 37 percent of the regional receipts came from outside the region.

Southwest Region

In the Southwest Region, the output of industrial timber products rose almost 15 percent between 1971 and 1974--the largest percentage increase in the State. Over 64 percent of the increase came from hardwoods. Production of round softwood increased by 12 percent, while the utilization of softwood residues as byproducts decreased by 16 percent.

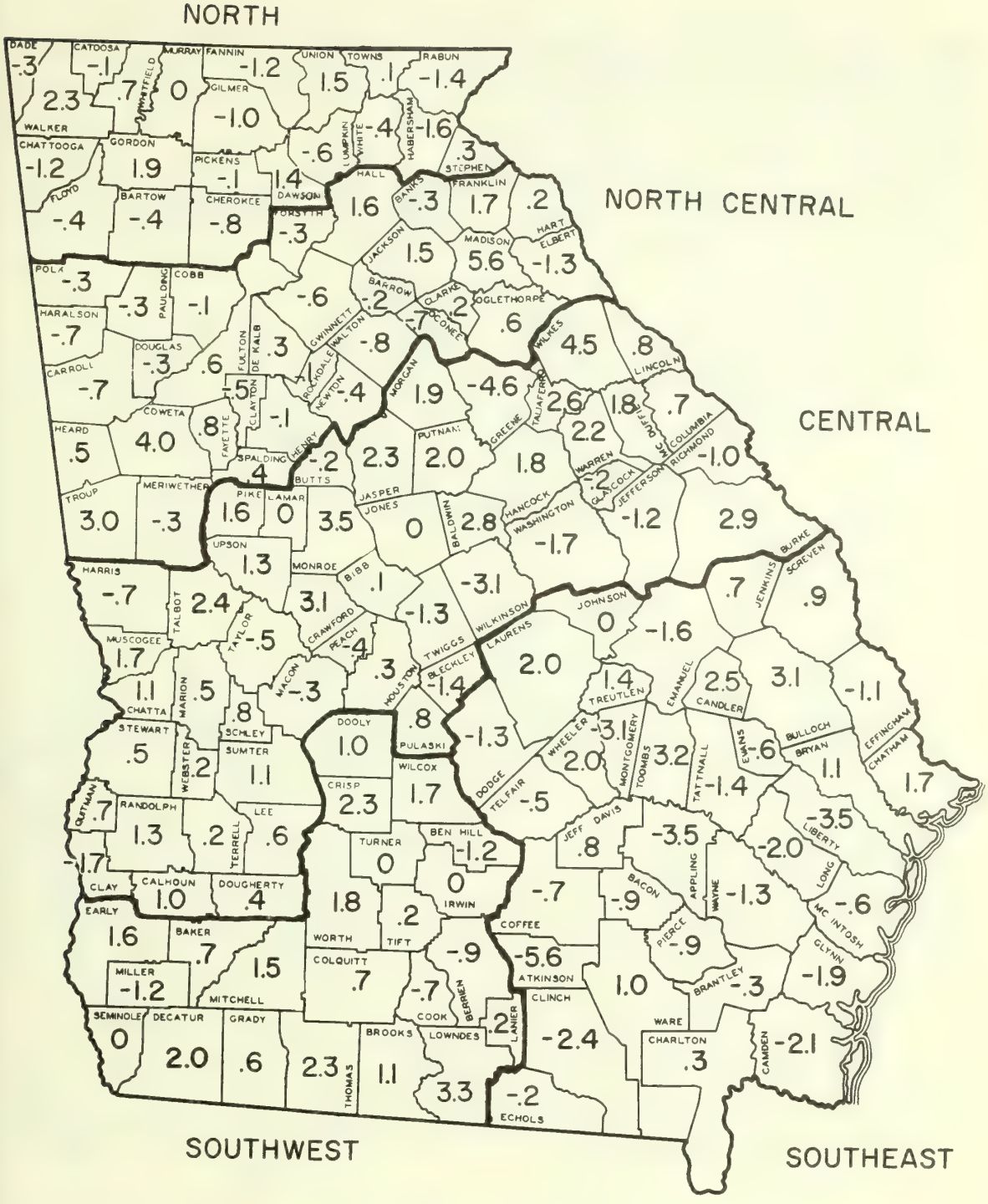

Figure 2.--Changes in output of roundwood products in each county in Georgia, 1971-1974, in million cubic feet.

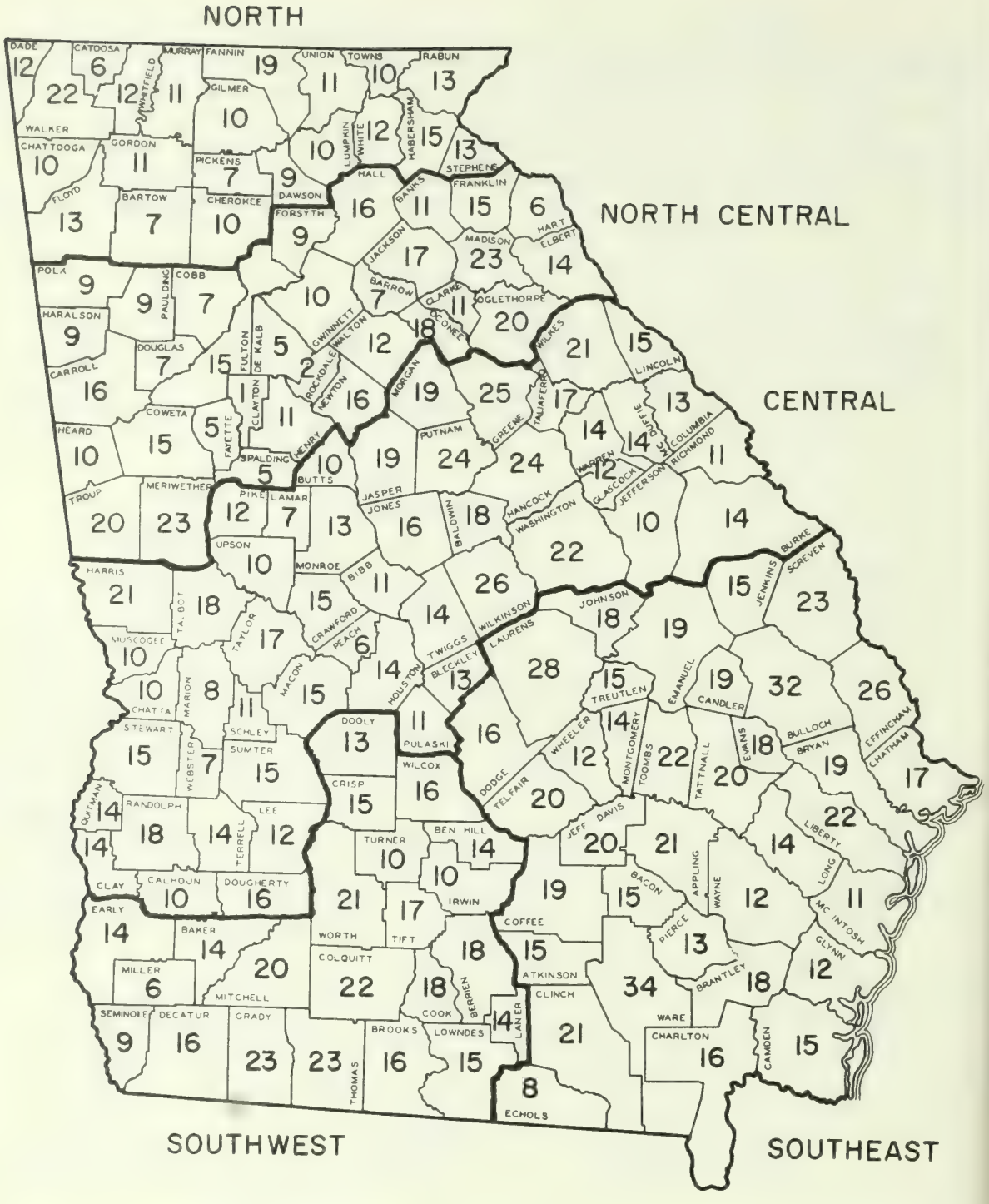

Figure 3.--Number of mills that each county in Georgia supplied with roundwood in 1974.

Although gains occurred in all major products made from round hardwood, the increase in round softwood was limited to pulpwood and miscellaneous products. The output of softwood saw logs and veneer logs dropped sharply between 1971 and 1974.

Almost half of the 145 million cubic feet of roundwood received in the region during 1974 came from outside its borders. At the same time, over 40 percent of the 125 million cubic feet of harvested roundwood was sent to plants outside the region.

According to the 1971 Forest Survey for the Southwest Region, the increased production of round softwood will not cause any immediate problems to the region's timber resources. However, a major increase in the softwood acreage harvested could result in long-range problems for the region. Unless the natural succession of species is prevented, many of the harvested softwood stands will be converted to hardwoods. If this hardwood encroachment is not controlled, the region will lose the prospective growth on the harvested acres. To avoid this loss, reforestation should be increased in the region to match the increased harvesting.

Central Region

In the Central Region, the output of industrial timber products increased by 36 million cubic feet between 1971 and 1974--the largest volume increase in the State. Production rose from both species groups, with softwoods providing more than three-fourths of the total increase.

Although the region's total harvest in 1974 was only slightly below that of the Southeast Region, over 42 percent of its harvested wood was sent to plants outside its borders. Almost 40 percent of this exported wood went to the Southeast Region. Wood receipts at the Central Region's primary plants were only half the amount received in the Southeast.

Production of round softwood in the Central Region increased by 12 percent during the 4-year period. The 1971 Forest Survey for the Central Region indicated that this increase would not cause an immediate resource problem in the region. As in the Southwest Region, however, the need for increased reforestation is evident.

North Central Region

In the North Central Region, the total output of industrial timber products increased 14 percent between 1971 and 1974. Softwood roundwood and plant by-products accounted for all of the increase. Production of softwood pulpwood was up by 10 million cubic feet.

There were 15 more sawmills operating in this region in 1974 than in 1971, and the output of softwood saw logs was up by 5 million cubic feet. Most of the new sawmills were in areas where outbreaks of the southern pine beetle were most severe; thus, much of the increase in softwood production could have resulted from salvage operations.

In 1974, the North Central Region had the smallest volume of roundwood receipts in the State. Almost 62 percent of its harvested roundwood was pulpwood, and all of this pulpwood was sent to outside mills.

North Region

In the North Region, the total output of industrial timber products dropped by over 2 million cubic feet between 1971 and 1974. Production of roundwood and plant byproducts from both species groups was down. The number of sawmills operating in the region dropped from 92 in 1971 to 81 in 1974, and the harvest of saw logs dropped by 18 percent. A 14-percent increase in the production of pulpwood was not enough to offset the loss in saw logs.

In 1974, roundwood receipts in the North Region exceeded the roundwood harvest by 20 percent. Roughly 64 percent of the region's receipts of round pulpwood came from outside the region.

PLANT RESIDUES

Of the 829.2 million cubic feet of roundwood receipts in the State in 1974, 650.5 million cubic feet were used for principal products. The remaining 178.7 million cubic feet consisted of initial plant residues. Subsequently, 133.9 million cubic feet of the initial residues--primarily the coarse material such as slabs, edgings, and veneer cores--were used as a roundwood substitute and processed as small saw logs, pulpwood, and miscellaneous products; an additional 19.2 million cubic feet were used for fuel. Only 25.5 million cubic feet, or 14 percent, of the initial plant residues were not utilized as a plant byproduct or fuel. These figures represent a decided improvement over those for 1971, when 41.4 million cubic feet, or 26 percent, of the initial plant residues were not used.

Although softwoods made up 84 percent of the roundwood receipts in 1974, they accounted for only 59 percent of the unused plant residues. Most unused plant residues from both species groups were produced at sawmills in the form of sawdust and other fine material. The largest volumes of unused residues were produced in the Southeast and Central Regions.

In addition to wood residues, almost 2.7 million tons of bark were accumulated by primary wood-using industries in Georgia in 1974. Utilization of such bark increased from just over 50 percent in 1971 to over 70 percent in 1974. During both years, most of this bark was used for industrial fuel. Other uses included mulch, fiber products, domestic fuel, and charcoal; the volume of bark used for these products has more than doubled since 1971.

HOW THE STUDY WAS MADE

Two methods were used to obtain data on Georgia's output of industrial timber products in 1971 and 1974. All pulpmills that drew wood from Georgia during those years were canvassed by mail. Personal interviews were conducted at all other primary wood-using industries that draw wood from Georgia during the two survey years. The pulpmills were canvassed by the Southeastern Forest Experiment Station in cooperation with the American Pulpwood Association. Interviews at the other industries were conducted by the Georgia Forestry Commission, and the data were processed by the Southeastern Station.

Detailed data from these surveys appear in the Appendix in tables 1-13. Some small mills were missed, and some reporting errors exist. Although these omissions and errors have little or no effect on the State or regional figures presented, they could greatly affect some of the county figures. County figures, therefore, should be used only in compiling information on groups of counties.

APPENDIX

Definitions of Terms

Coarse residues.--Wood residues suitable for chipping, such as slabs, edgings, and veneer cores.

Fine residues.--Wood residues not suitable for chipping, such as sawdust and shavings.

Growing-stock trees.--Live trees of commercial species that either contain or are capable of producing at least one 12-foot saw log.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad leaved and deciduous.

Industrial wood.--All roundwood products except fuelwood.

Net annual growth.--The increase in volume for a specific year.

Plant byproducts.--Wood products, such as pulp chips, obtained incidentally to production of other manufactured products.

Primary wood-using plants (industries).--Those plants or industries that utilized roundwood products in the manufacture of their principal products. (Plants that utilize only plant byproducts as a substitute for roundwood are included.)

Roundwood products.--Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timber products.--Roundwood products and plant byproducts.

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; by cultural operations such as stand improvement; or by land clearing or changes in land use.

Unused plant residues.--Wood material from manufacturing plants not utilized for some product.

Conversion Factors

Cubic feet of wood per standard unit

Product	Standard unit	Softwood	Hardwood
Saw logs	Thousand board feet[1]	198.005	188.986
Veneer logs	Thousand board feet[1]	177.145	172.005
Pulpwood	Standard cords	74.490	75.600
Other products	Thousand cubic feet	.001	.001

[1] International $\frac{1}{4}$-inch rule.

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13. Roundwood products output, by species group, year, and county, in Georgia

Table 1.--Output of industrial timber products, by source of material, year, product, and species group, Georgia

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	241,738	239,181	239,229	236,560	2,509	2,621
Hardwood	57,599	67,323	57,502	67,201	97	122
Total	299,337	306,504	296,731	303,761	2,606	2,743
Veneer logs and bolts:						
Softwood	27,147	28,765	27,147	28,765	--	--
Hardwood	13,200	15,295	13,200	15,295	--	--
Total	40,347	44,060	40,347	44,060	--	--
Pulpwood:[1/]						
Softwood	479,047	515,493	398,001	430,584	81,046	84,909
Hardwood	62,528	76,330	46,966	56,077	15,562	20,253
Total	541,575	591,823	444,967	486,661	96,608	105,162
Miscellaneous:						
Softwood	33,862	38,564	18,171	16,735	15,691	21,829
Hardwood	4,610	4,619	1,590	452	3,020	4,167
Total	38,472	43,183	19,761	17,187	18,711	25,996
All industrial:						
Softwood	781,794	822,003	682,548	712,644	99,246	109,359
Hardwood	137,937	163,567	119,258	139,025	18,679	24,542
Total	919,731	985,570	801,806	851,669	117,925	133,901

1/ 1971 roundwood figures include 16,870 thousand cubic feet of softwood and 1,278 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants. 1974 roundwood figures include 19,632 thousand cubic feet of softwood and 3,705 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants.

Table 2.--Output of industrial timber products, by source of material, year, product, and species group, Southeast Region

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	72,511	78,519	72,511	75,933	--	2,586
Hardwood	7,735	12,719	7,735	12,719	--	--
Total	80,246	91,238	80,246	88,652	--	2,586
Veneer logs and bolts:						
Softwood	9,285	10,705	9,285	10,705	--	--
Hardwood	3,941	3,232	3,941	3,232	--	--
Total	13,226	13,937	13,226	13,937	--	--
Pulpwood:[1/]						
Softwood	204,624	190,532	178,769	158,479	25,855	32,053
Hardwood	20,109	20,247	16,797	16,036	3,312	4,211
Total	224,733	210,779	195,566	174,515	29,167	36,264
Miscellaneous:						
Softwood	16,557	15,759	13,227	11,284	3,330	4,475
Hardwood	9	715	--	--	9	715
Total	16,566	16,474	13,227	11,284	3,339	5,190
All industrial:						
Softwood	302,977	295,515	273,792	256,401	29,185	39,114
Hardwood	31,794	36,913	28,473	31,987	3,321	4,926
Total	334,771	332,428	302,265	288,388	32,506	44,040

[1/] 1971 roundwood figures include 10,986 thousand cubic feet of softwood and 991 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants. 1974 roundwood figures include 11,327 thousand cubic feet of softwood and 1,560 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants.

Table 3.--Output of industrial timber products, by source of material, year, product, and species group, Southwest Region

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	44,460	35,882	41,992	35,882	2,468	--
Hardwood	4,271	9,571	4,174	9,542	97	29
Total	48,731	45,453	46,166	45,424	2,565	29
Veneer logs and bolts:						
Softwood	3,104	2,966	3,104	2,966	--	--
Hardwood	4,233	6,138	4,233	6,138	--	--
Total	7,337	9,104	7,337	9,104	--	--
Pulpwood:[1/]						
Softwood	63,204	74,816	42,896	59,088	20,308	15,728
Hardwood	7,745	12,649	5,658	7,541	2,087	5,108
Total	70,949	87,465	48,554	66,629	22,395	20,836
Miscellaneous:						
Softwood	6,058	10,162	2,871	4,106	3,187	6,056
Hardwood	103	492	90	5	13	487
Total	6,161	10,654	2,961	4,111	3,200	6,543
All industrial:						
Softwood	116,826	123,826	90,863	102,042	25,963	21,784
Hardwood	16,352	28,850	14,155	23,226	2,197	5,624
Total	133,178	152,676	105,018	125,268	28,160	27,408

1/ 1971 roundwood figures include 134 thousand cubic feet of softwood roundwood chipped at other primary wood-using plants. 1974 roundwood figures include 3,470 thousand cubic feet of softwood roundwood chipped at other primary wood-using plants.

Table 4.--Output of industrial timber products, by source of material, year, product, and species group, Central Region

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	82,882	80,737	82,841	80,702	41	35
Hardwood	25,630	27,419	25,630	27,326	--	93
Total	108,512	108,156	108,471	108,028	41	128
Veneer logs and bolts:						
Softwood	13,669	13,973	13,669	13,973	--	--
Hardwood	3,648	4,304	3,648	4,304	--	--
Total	17,317	18,277	17,317	18,277	--	--
Pulpwood:[1/]						
Softwood	130,899	158,066	102,646	129,297	28,253	28,769
Hardwood	24,434	31,377	17,223	23,190	7,211	8,187
Total	155,333	189,443	119,869	152,487	35,464	36,956
Miscellaneous:						
Softwood	5,753	8,300	1,005	833	4,748	7,467
Hardwood	2,660	1,750	1,274	328	1,386	1,422
Total	8,413	10,050	2,279	1,161	6,134	8,889
All industrial:						
Softwood	233,203	261,076	200,161	224,805	33,042	36,271
Hardwood	56,372	64,850	47,775	55,148	8,597	9,702
Total	289,575	325,926	247,936	279,953	41,639	45,973

1/ 1971 roundwood figures include 5,750 thousand cubic feet of softwood and 287 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants. 1974 roundwood figures include 4,835 thousand cubic feet of softwood and 2,145 thousand cubic feet of hardwood roundwood chipped at other primary wood-using plants.

Table 5.--Output of industrial timber products, by source of material, year, product, and species group, North Central Region

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	21,473	26,743	21,473	26,743	--	--
Hardwood	10,507	10,524	10,507	10,524	--	--
Total	31,980	37,267	31,980	37,267	--	--
Veneer logs and bolts:						
Softwood	1,089	1,121	1,089	1,121	--	--
Hardwood	1,215	1,315	1,215	1,315	--	--
Total	2,304	2,436	2,304	2,436	--	--
Pulpwood:						
Softwood	57,220	67,382	54,061	61,933	3,159	5,449
Hardwood	6,705	6,276	4,365	4,320	2,340	1,956
Total	63,925	73,658	58,426	66,253	5,499	7,405
Miscellaneous:						
Softwood	1,984	1,486	581	229	1,403	1,257
Hardwood	857	771	122	29	735	742
Total	2,841	2,257	703	258	2,138	1,999
All industrial:						
Softwood	81,766	96,732	77,204	90,026	4,562	6,706
Hardwood	19,284	18,886	16,209	16,188	3,075	2,698
Total	101,050	115,618	93,413	106,214	7,637	9,404

Table 6.--Output of industrial timber products, by source of material, year, product, and species group, North Region

Product and species group	Total output		Roundwood output		Byproduct output	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Saw logs:						
Softwood	20,412	17,300	20,412	17,300	--	--
Hardwood	9,456	7,090	9,456	7,090	--	--
Total	29,868	24,390	29,868	24,390	--	--
Veneer logs and bolts:						
Softwood	--	--	--	--	--	--
Hardwood	163	306	163	306	--	--
Total	163	306	163	306	--	--
Pulpwood:						
Softwood	23,100	24,697	19,629	21,787	3,471	2,910
Hardwood	3,535	5,781	2,923	4,990	612	791
Total	26,635	30,478	22,552	26,777	4,083	3,701
Miscellaneous:						
Softwood	3,510	2,857	487	283	3,023	2,574
Hardwood	981	891	104	90	877	801
Total	4,491	3,748	591	373	3,900	3,375
All industrial:						
Softwood	47,022	44,854	40,528	39,370	6,494	5,484
Hardwood	14,135	14,068	12,646	12,476	1,489	1,592
Total	61,157	58,922	53,174	51,846	7,983	7,076

Table 7.--Number of primary wood-using plants, by Forest Survey Region, year, and industry

Industry	Total		Forest Survey Region									
			Southeast		Southwest		Central		North Central		North	
	1971	1974	1971	1974	1971	1974	1971	1974	1971	1974	1971	1974
	Number of plants											
Sawmills	301	301	53	50	33	35	81	78	42	57	92	81
Veneer mills	23	24	8	7	5	5	6	8	3	3	1	1
Pulpmills	15	15	8	8	2	2	4	4	--	--	1	1
Other miscellaneous[1/]	29	26	8	12	7	6	7	4	5	2	2	2
All plants	368	366	77	77	47	48	98	94	50	62	96	85

1/ Includes excelsior plants, handle plants, treating plants, etc.

Table 8.--Industrial roundwood movement, by year, and species group, Georgia

Species group	1971	1974
	Thousand cubic feet	
Softwoods:		
Output	682,548	712,644
Retained	578,369	586,975
Shipped out	104,179	125,669
Shipped in	112,579	92,054
Receipts	690,948	679,029
Hardwoods:		
Output	119,258	139,025
Retained	109,131	124,928
Shipped out	10,127	14,097
Shipped in	28,774	25,249
Receipts	137,905	150,177
All species:		
Output	801,806	851,669
Retained	687,500	711,903
Shipped out	114,306	139,766
Shipped in	141,353	117,303
Receipts	828,853	829,206

Table 9.--Industrial roundwood movement, by Forest Survey Region, and species group, 1974

Species group	Forest Survey Region				
	Southeast	Southwest	Central	North Central	North
	Thousand cubic feet				
Softwoods:					
Output	256,401	102,042	224,805	90,026	39,370
Retained	213,960	59,019	122,831	20,440	28,524
Shipped out	42,441	43,023	101,974	69,586	10,846
Shipped in	114,203	65,636	25,463	4,079	24,872
Receipts	328,163	124,655	148,294	24,519	53,396
Hardwoods:					
Output	31,987	23,226	55,148	16,188	12,476
Retained	27,808	15,234	38,343	9,832	8,760
Shipped out	4,179	7,992	16,805	6,356	3,716
Shipped in	28,802	4,722	11,974	1,714	2,988
Receipts	56,610	19,956	50,317	11,546	11,748
All species:					
Output	288,388	125,268	279,953	106,214	51,846
Retained	241,768	74,253	161,174	30,272	37,284
Shipped out	46,620	51,015	118,779	75,942	14,562
Shipped in	143,005	70,358	37,437	5,793	27,860
Receipts	384,773	144,611	198,611	36,065	65,144

Table 10.--Volume of unused plant residues at primary wood-using industries, by industry, species group, and type of residue, 1974

Species group and type of residue	All industries	Lumber	Veneer and plywood	Other
		Thousand cubic feet		
Softwoods:				
Coarse	2,320	2,304	2	14
Shavings	735	735	--	--
Other fine	12,061	11,821	170	70
Total	15,116	14,860	172	84
Hardwoods:				
Coarse	2,176	1,996	60	120
Shavings	342	342	--	--
Other fine	7,905	6,501	1,357	47
Total	10,423	8,839	1,417	167
All species:				
Coarse	4,496	4,300	62	134
Shavings	1,077	1,077	--	--
Other fine	19,966	18,322	1,527	117
Total	25,539	23,699	1,589	251

Table 11.--Volume of unused plant residues, by Forest Survey Region, species group, and industry, 1974

Species group and industry	Total	Forest Survey Region				
		Southeast	Southwest	Central	North Central	North
	Thousand cubic feet					
Softwood:						
Lumber	14,860	3,782	1,848	4,006	2,998	2,226
Veneer and plywood	172	30	138	4	--	--
Other	84	76	--	8	--	--
Total	15,116	3,888	1,986	4,018	2,998	2,226
Hardwood:						
Lumber	8,839	1,447	829	3,719	1,425	1,419
Veneer and plywood	1,417	756	234	197	230	--
Other	167	--	--	167	--	--
Total	10,423	2,203	1,063	4,083	1,655	1,419
All species:						
Lumber	23,699	5,229	2,677	7,725	4,423	3,645
Veneer and plywood	1,589	786	372	201	230	--
Other	251	76	--	175	--	--
Total	25,539	6,091	3,049	8,101	4,653	3,645

Table 12.--Disposal of bark at primary wood-using industries, by species group, year, and disposition

Disposition	All species		Softwood		Hardwood	
	1971	1974	1971	1974	1971	1974
	Thousand green tons					
Fiber products	27.1	40.2	18.9	21.9	8.2	18.3
Charcoal	1.0	5.2	0.2	2.2	0.8	3.0
Industrial fuel	1,308.3	1,742.5	1,084.3	1,459.9	224.0	282.6
Domestic fuel	9.6	11.1	5.7	5.4	3.9	5.7
Miscellaneous	28.8	98.2	25.0	91.5	3.8	6.7
Not used	1,265.4	828.3	1,026.1	582.5	239.3	245.8
Total	2,640.2	2,725.5	2,160.2	2,163.4	480.0	562.1

Table 13.--Roundwood products output,[1/] by species group, year, and county, in Georgia

Survey unit and county	All species		Softwood		Hardwood	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Southeast:						
Appling	14,448	10,913	12,595	9,723	1,853	1,190
Atkinson	13,315	7,717	13,274	7,669	41	48
Bacon	6,265	5,400	6,011	4,794	254	606
Brantley	10,524	10,258	9,617	9,248	907	1,010
Bryan	8,586	9,733	7,778	8,681	808	1,052
Bulloch	9,609	12,691	9,218	11,760	391	931
Camden	10,233	8,119	9,010	7,005	1,223	1,114
Candler	2,769	5,256	2,389	4,780	380	476
Charlton	11,445	11,713	11,074	11,083	371	630
Chatman	2,193	3,899	1,913	3,395	280	504
Clinch	17,004	14,654	16,821	14,539	183	85
Coffee	14,360	13,617	13,986	12,328	374	1,289
Dodge	9,740	8,442	8,580	7,660	1,160	782
Echols	4,707	4,547	4,707	4,547	--	--
Effingham	8,745	7,608	7,227	5,778	1,518	1,830
Emanuel	9,885	8,334	9,113	6,310	772	2,024
Evans	3,704	3,096	3,471	2,701	233	395
Glynn	7,079	5,153	5,681	3,736	1,398	1,417
Jeff Davis	5,979	6,767	5,304	5,196	675	1,571
Jenkins	3,882	4,600	3,215	3,874	667	726
Johnson	4,470	4,456	3,508	3,457	962	999
Laurens	9,640	11,629	6,984	9,072	2,656	2,557
Liberty	12,776	9,232	9,735	7,163	3,041	2,069
Long	6,340	4,314	5,159	3,670	1,181	644
McIntosh	4,773	4,203	4,171	3,964	602	239
Montgomery	6,684	3,538	6,461	3,107	223	431
Pierce	5,481	4,562	5,323	4,327	158	235
Screven	6,739	7,650	5,016	6,206	1,723	1,444
Tattnall	7,548	6,159	7,102	6,016	446	143
Telfair	8,610	8,153	7,699	6,986	911	1,167
Toombs	6,784	8,942	5,497	8,034	287	908
Treutlen	3,491	4,935	3,163	4,554	328	381
Ware	15,963	16,669	15,580	16,355	73	314
Wayne	12,436	11,132	11,485	10,781	951	351
Wheeler	5,391	7,440	4,939	6,575	452	865
Total	290,288	275,501	262,806	245,074	27,482	30,427
Southwest:						
Baker	2,636	3,300	2,190	3,040	446	260
Ben Hill	6,978	5,818	6,755	5,136	223	682
Berrien	6,359	5,492	5,692	4,865	667	627
Brooks	7,657	8,758	6,279	5,316	1,378	3,442
Colquitt	9,088	9,709	8,375	8,532	713	1,237
Cook	5,545	4,830	3,818	4,103	1,727	727
Crisp	1,865	4,116	1,760	3,683	105	433
Decatur	6,074	8,050	4,911	6,720	1,163	1,330
Dooly	2,951	3,930	1,977	3,151	974	779
Early	3,381	5,009	2,296	3,188	1,085	1,821
Grady	5,557	6,128	3,818	4,182	1,739	1,946
Irwin	2,007	2,019	2,007	1,894	--	125
Lanier	4,418	4,615	4,285	2,836	133	1,779
Lowndes	4,144	7,415	3,721	5,518	423	1,897
Miller	2,614	1,406	2,097	1,284	517	122
Mitchell	5,906	7,371	5,661	6,898	245	473
Seminole	2,117	2,067	1,851	1,748	266	319
Thomas	9,918	12,257	8,428	10,241	1,490	2,016
Tift	3,802	4,049	3,414	3,016	388	1,033
Turner	2,020	2,003	2,017	1,920	3	83
Wilcox	4,478	6,221	4,142	4,703	336	1,518
Worth	5,362	7,175	5,235	6,598	134	577
Total	104,884	121,798	90,729	98,572	14,155	23,226

Table 13.--Roundwood products output,[1/] by species group, year, and county, in Georgia (continued)

Survey unit and county	All species		Softwood		Hardwood	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
Central:						
Baldwin	4,016	6,775	3,088	5,772	928	1,003
Bibb	2,277	2,418	1,675	1,813	602	605
Bleckley	2,917	1,538	2,082	833	835	705
Burke	6,230	9,090	3,620	6,876	2,610	2,214
Butts	2,841	2,663	2,401	2,063	440	600
Calhoun	2,753	3,748	1,944	3,244	809	504
Chattahoochee	3,556	4,691	2,835	3,970	721	721
Clay	4,113	2,397	3,365	1,683	748	714
Columbia	5,073	5,752	4,276	4,817	797	935
Crawford	5,999	9,067	5,166	6,868	833	2,199
Dougherty	4,813	5,208	4,163	4,555	650	653
Glascock	1,965	1,739	1,150	997	815	742
Greene	13,482	8,884	11,318	7,409	2,164	1,475
Hancock	8,303	10,072	6,962	8,619	1,341	1,453
Harris	9,015	8,361	7,986	6,963	1,029	1,398
Houston	4,893	5,155	3,535	4,020	1,358	1,135
Jasper	6,528	8,791	5,297	6,567	1,231	2,224
Jefferson	4,940	3,746	3,624	2,785	1,316	961
Jones	7,627	7,662	6,429	6,745	1,198	917
Lamar	2,772	2,817	2,410	2,561	362	256
Lee	1,272	1,826	1,096	1,665	176	161
Lincoln	5,717	6,513	4,802	5,840	915	673
Central:						
McDuffie	2,847	4,599	2,412	3,990	435	609
Macon	3,435	3,176	2,188	2,467	1,247	709
Marion	2,349	2,826	2,047	2,326	302	500
Monroe	6,591	10,121	5,298	7,629	1,293	2,492
Morgan	4,944	6,870	4,122	5,676	822	1,194
Muscogee	1,743	3,442	1,557	2,887	186	555
Peach	1,327	919	1,104	768	223	151
Pike	1,354	2,940	1,147	2,732	207	208
Pulaski	2,148	2,993	1,630	2,168	518	825
Putnam	9,241	11,253	8,110	10,579	1,131	674
Quitman	2,428	3,080	2,087	2,612	341	468
Randolph	6,974	8,289	5,686	6,531	1,288	1,758
Richmond	6,459	5,451	4,555	2,996	1,904	2,455
Schley	1,980	2,774	1,811	2,551	169	223
Stewart	10,183	10,728	9,003	9,331	1,180	1,397
Sumter	1,997	3,086	1,743	2,871	254	215
Talbot	5,840	8,221	5,126	6,758	714	1,463
Taliaferro	3,663	6,278	3,002	5,139	661	1,139
Taylor	3,265	2,745	2,373	2,332	892	413
Terrell	2,931	3,166	2,774	2,968	157	198
Twiggs	5,689	4,391	4,517	2,854	1,172	1,537
Upson	3,413	4,703	2,950	3,999	463	704
Warren	2,667	4,833	1,916	3,958	751	875
Washington	10,735	9,058	7,721	7,500	3,014	1,558
Webster	2,766	2,928	2,324	2,123	442	805
Wilkes	11,869	16,364	10,436	11,953	1,433	4,411
Wilkinson	11,959	8,826	7,548	5,607	4,411	3,219
Total	241,899	272,973	194,411	219,970	47,488	53,003

Table 13.--Roundwood products output,[1/] by species group, year, and county, in Georgia (continued)

Survey unit and county	All species		Softwood		Hardwood	
	1971	1974	1971	1974	1971	1974
	Thousand cubic feet					
North Central:						
Banks	1,653	1,354	1,427	1,240	226	114
Barrow	2,665	2,415	2,098	2,094	567	321
Carroll	7,040	6,302	5,962	5,179	1,078	1,123
Clarke	933	1,138	804	977	129	161
Clayton	692	223	671	223	21	--
Cobb	1,914	1,776	1,704	1,715	210	61
Coweta	6,271	10,288	4,752	8,449	1,519	1,839
DeKalb	307	646	274	614	33	32
Douglas	1,632	1,328	1,494	1,237	138	91
Elbert	5,234	3,965	4,648	3,132	586	833
Fayette	627	1,382	499	1,272	128	110
Forsyth	2,052	1,749	1,336	1,354	716	395
Franklin	2,211	3,878	1,575	3,007	636	871
Fulton	3,004	3,633	2,688	2,959	316	674
Gwinnett	2,600	1,979	2,341	1,711	259	268
Hall	1,912	3,530	1,785	3,134	127	396
Haralson	3,931	3,271	3,064	2,599	867	672
Hart	638	803	549	651	89	152
Heard	3,650	4,103	3,078	3,474	572	629
Henry	2,785	2,648	2,385	2,051	400	597
Jackson	2,291	3,796	1,976	3,368	315	428
Madison	1,414	7,010	1,255	6,551	159	459
Meriwether	8,084	7,813	6,174	7,067	1,910	746
Newton	2,961	2,596	2,433	2,146	528	450
Oconee	3,518	2,777	2,994	2,433	524	344
Oglethorpe	6,608	7,175	5,613	5,681	995	1,494
Paulding	3,338	2,993	2,735	2,490	603	503
Polk	2,871	2,544	2,252	1,790	619	754
Rockdale	209	154	170	140	39	14
Spalding	916	1,281	861	1,147	55	134
Troup	7,007	10,050	5,610	8,737	1,397	1,313
Walton	2,445	1,614	1,997	1,404	448	210
Total	93,413	106,214	77,204	90,026	16,209	16,188
North:						
Bartow	3,426	3,021	3,121	2,788	305	233
Catoosa	518	466	373	366	145	100
Chattooga	3,735	2,568	3,119	1,716	616	852
Cherokee	6,965	6,160	6,296	5,055	669	1,105
Dade	1,070	752	627	458	443	294
Dawson	913	2,288	769	2,092	144	196
Fannin	3,979	2,741	1,729	1,681	2,250	1,060
Floyd	3,347	2,897	2,676	2,145	671	752
Gilmer	3,867	2,854	2,565	2,148	1,302	706
Gordon	2,633	4,533	2,304	4,000	329	533
Habersham	3,985	2,418	2,979	1,950	1,006	468
Lumpkin	1,755	1,173	1,419	816	336	357
Murray	3,055	3,044	2,629	2,638	426	406
Pickens	1,786	1,646	1,493	1,477	293	169
Rabun	2,992	1,575	2,032	750	960	825
Stephens	2,237	2,559	1,609	1,652	628	907
Towns	369	423	112	297	257	126
Union	1,172	2,691	592	1,340	580	1,351
Walker	2,499	4,848	1,811	3,462	688	1,386
White	1,073	723	706	484	367	239
Whitefield	1,798	2,466	1,567	2,055	231	411
Total	53,174	51,846	40,528	39,370	12,646	12,476
All counties	783,658	828,332	665,678	693,012	117,980	135,320

[1/] Excludes round pulpwood chipped at other primary wood-using industries.

Welch, Richard L., and Thomas R. Bellamy
1976. Changes in output of industrial timber products in Georgia, 1971-1974. USDA For. Serv. Resour. Bull. SE-36, 28 p. Southeast. For. Exp. Stn., Asheville, N.C.

The total output of industrial timber products in Georgia amounted to almost 986 million cubic feet in 1974, 7 percent more than in 1971. Production of all major roundwood products and plant byproducts from softwood and hardwood species increased. Of the five Forest Survey Regions in the State, the Southeast Region had the largest total output, the Southwest Region had the greatest percentage increase, and the Central Region had the greatest volume increase. The volume of unused plant residues produced in the State declined by 38 percent between 1971 and 1974, and the volume of unused bark dropped by 35 percent.

Keywords: Roundwood products, plant byproducts, softwood products, hardwood products, unused plant residues, roundwood receipts.

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The Forest Service, U. S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

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USDA FOREST SERVICE RESOURCE BULLETIN SE-37

SOUTHERN PULPWOOD PRODUCTION, 1975

Thomas R. Bellamy

Forest Service, U. S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

SEPTEMBER 1976

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Thomas R. Bellamy

SOUTHEASTERN FOREST EXPERIMENT STATION
Asheville, North Carolina

and

SOUTHERN FOREST EXPERIMENT STATION
New Orleans, Louisiana

of the

Forest Service, U. S. Department of Agriculture

in cooperation with the

AMERICAN PULPWOOD ASSOCIATION

1976

Southern counties.

HIGHLIGHTS — Southern pulpwood production in 1975 dropped a record 14 percent from the previous year. A 16-percent drop in roundwood accounted for over 80 percent of the total decline. Usable wood residues dropped 9 percent, primarily from hardwoods. Of the 42.3 million cords produced, 30 million were roundwood and 12 million were residues. Pulping capacity for the region increased 2 percent to 96,555 tons per day.

Reflecting a sluggish U.S. and world econ-y, southern pulpwood production in 1975 pped almost 7 million cords, or 14 percent, m the previous year. Total production ounted to 42.3 million cords (table 1), slight- more than in 1970. Three states—Alabama, orgia, and Mississippi—absorbed 49 percent of decline but remained the leading producers the South. Their combined production pro-ed over 40 percent of the total. Georgia re-ined the largest pulpwood producer with ost 7 million cords, followed by Alabama h 6.3 million.

Roundwood production was slightly over million cords, with softwood, primarily thern yellow pine, comprising about three-rths of the total (table 2). Of the hardwood duction, oaks made up 46 percent, while ns and other hardwoods each made up 27 rcent. Regionwide, roundwood production pped by 16 percent (table 3). Production of twood dropped 13 percent, or 3.4 million ds, while hardwood dropped 2.1 million ds. All states reported declines except Ten-see, where a 21-percent increase in hard-ods accounted for an overall increase of 8 rcent.

Use of wood residues for pulping declined ercent but still accounted for almost 30 per-t of total production (tables 4 and 5). Out- declined in all states except Arkansas and ssissippi, where increases of 9 and 7 percent re reported. The drop in hardwood pro-ction accounted for almost two-thirds of the cline in residues. Production of chips was down slightly, while other residues dropped over 40 percent.

Table 1.--Pulpwood production in the South during 1975, and change since 1974

State	Pulpwood	Change
	Thousand cords	Percent
Alabama	6,335.0	-14
Arkansas	3,242.5	- 1
Florida	2,991.4	-11
Georgia	6,957.2	-14
Louisiana	3,567.1	-21
Mississippi	4,916.2	-18
North Carolina	3,700.5	-18
Oklahoma	390.1	-45
South Carolina	3,529.1	- 8
Tennessee	743.2	- 9
Texas	3,626.8	- 6
Virginia	2,336.5	-11
All States	42,335.6	-14

The Midsouth led the Southeast in pulpwood production by 3.3 million cords (table 6). For the past 6 years the Midsouth has produced more pulpwood than the Southeast, but the Southeast has led in producing softwood roundwood. In 1975, the Midsouth led in all categories of pulpwood production.

In 1975, three counties in the South produced over 200,000 cords of round pulpwood. Taylor County, Florida, led with 228,344 cords, followed by Ashley County, Arkansas, with

Table 2.--Roundwood production in the South, by State and species group, 1975

State	All species	Softwood	Hardwood			
			Total	Gums	Oaks	Other hardwoods
	Thousand cords					
Alabama	4,668.2	3,402.6	1,265.6	275.1	584.4	406.1
Arkansas	1,983.8	1,360.2	623.6	119.5	396.8	107.3
Florida	2,534.7	2,320.4	214.3	77.3	94.9	42.1
Georgia	5,179.1	4,578.5	600.6	208.0	260.0	132.6
Louisiana	2,755.9	2,108.5	647.4	174.6	245.2	227.6
Mississippi	3,279.0	2,117.4	1,161.6	296.7	499.8	365.1
North Carolina	2,427.0	1,571.4	855.6	419.8	336.0	99.8
Oklahoma	158.9	110.5	48.4	6.8	23.7	17.9
South Carolina	2,657.3	2,134.1	523.2	249.3	206.2	67.7
Tennessee	561.8	209.4	352.4	19.3	237.3	95.8
Texas	2,408.5	2,114.9	293.6	52.3	90.2	151.1
Virginia	1,428.9	721.8	707.1	66.4	370.3	270.4
All States	30,043.1	22,749.7	7,293.4	1,965.1	3,344.8	1,983.5

Table 3.--Roundwood production in the South, by State and species group, 1975 and 1974

State	Change from 1974	1975			1974		
		All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Percent	Thousand cords					
Alabama	-18	4,668.2	3,402.6	1,265.6	5,687.8	3,981.0	1,706.8
Arkansas	- 7	1,983.8	1,360.2	623.6	2,139.0	1,402.2	736.8
Florida	-12	2,534.7	2,320.4	214.3	2,889.1	2,654.8	234.3
Georgia	-17	5,179.1	4,578.5	600.6	6,210.7	5,517.1	693.6
Louisiana	-15	2,755.9	2,108.5	647.4	3,242.3	2,312.5	929.8
Mississippi	-27	3,279.0	2,117.4	1,161.6	4,502.7	2,782.1	1,720.6
North Carolina	-21	2,427.0	1,571.4	855.6	3,064.7	1,993.5	1,071.2
Oklahoma	-39	158.9	110.5	48.4	261.2	119.5	141.7
South Carolina	- 4	2,657.3	2,134.1	523.2	2,781.5	2,154.3	627.2
Tennessee	+ 8	561.8	209.4	352.4	521.3	229.9	291.4
Texas	- 7	2,408.5	2,114.9	293.6	2,601.3	2,168.4	432.9
Virginia	-17	1,428.9	721.8	707.1	1,714.5	875.2	839.3
All States	-16	30,043.1	22,749.7	7,293.4	35,616.1	26,190.5	9,425.6

223,621 and Choctaw County, Alabama, with 212,579. The number of counties or parishes with roundwood production of more than 100,000 cords declined from 91 in 1974 to 49 in 1975 (county production tables 7-18). Over three-fourths were located in the Midsouth. Twenty-seven counties or parishes reported softwood production of over 100,000 cords: Louisiana led with nine parishes; Texas reported eight counties; and Alabama reported four. Choctaw County, Alabama, was the only county in the South to produce more than 100,000 cords of hardwood.

The completion of two new mills and the expansion of several others resulted in a 2-percent increase in pulping capacity for the South, despite the closing of two mills. Arkansas and South Carolina accounted for over 90 percent of the increase. Total pulping capacity in the South reached 96,555 tons per day. In 1975, there were 113 mills operating in the region, and 12 mills outside the region used southern pulpwood (table 19).

Proposed construction of several new mills in the South was postponed because of poor market conditions and extreme inflation. Only one mill was being rebuilt in 1975 (table 20).

Table 4.--Southern output of wood residues for pulp manufacture, by State and species group, 1975 and 1974

State	Change from 1974	1975			1974		
		All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Percent	Thousand cords					
abama	- 2	1,666.8	1,377.9	288.9	1,704.2	1,325.1	379.1
kansas	+ 9	1,258.7	1,105.5	153.2	1,152.1	986.7	165.4
orida	- 6	456.7	337.7	119.0	488.0	367.3	120.7
orgia	- 7	1,778.1	1,549.1	229.0	1,907.1	1,576.1	331.0
uisiana	-37	811.2	634.7	176.5	1,285.9	1,024.7	261.2
ssissippi	+ 7	1,637.2	1,330.4	306.8	1,529.5	1,150.8	378.7
rth Carolina	-12	1,273.5	1,009.0	264.5	1,451.0	1,109.1	341.9
lahoma	-48	231.2	215.8	15.4	445.3	389.4	55.9
uth Carolina	-18	871.8	736.7	135.1	1,061.4	854.8	206.6
nnessee	-39	181.4	17.8	163.6	297.6	23.9	273.7
xas	- 2	1,218.3	1,093.3	125.0	1,246.0	1,125.8	120.2
rginia	- 1	907.6	553.4	354.2	917.3	463.6	453.7
l States	- 9	12,292.5	9,961.3	2,331.2	13,486.0	10,780.9	2,705.7

Table 5.--Southern output of wood residues for pulp manufacture, by State and type of residue, 1975

State	All types	Chips			Other residues[1]		
		All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cords						
Alabama	1,666.8	1,546.3	1,268.8	277.5	120.5	109.1	11.4
Arkansas	1,258.7	1,231.7	1,091.0	140.7	27.0	14.5	12.5
Florida	456.7	444.2	325.2	119.0	12.5	12.5	--
Georgia	1,778.1	1,767.5	1,538.5	229.0	10.6	10.6	--
Louisiana	811.2	764.8	613.2	151.6	46.4	21.5	24.9
Mississippi	1,637.2	1,585.0	1,289.9	295.1	52.2	40.5	11.7
North Carolina	1,273.5	1,203.5	964.8	238.7	70.0	44.2	25.8
Oklahoma	231.2	231.2	215.8	15.4	--	--	--
South Carolina	871.8	797.9	662.8	135.1	73.9	73.9	--
Tennessee	181.4	181.4	17.8	163.6	--	--	--
Texas	1,218.3	1,114.6	989.6	125.0	103.7	103.7	--
Virginia	907.6	816.3	515.0	301.3	91.3	38.4	52.9
All States	12,292.5	11,684.4	9,492.4	2,192.0	608.1	468.9	139.2

1/ Veneer cores, pole and piling trim, cull material, sawdust, and secondary residues.

Table 6.--Southern pulpwood production, by Experiment Station territory, 1975

Station and type of wood	All species	Softwood	Hardwood
	Standard cords		
Southeastern:[1]			
Roundwood	14,227,010	11,326,165	2,900,845
Residues	5,287,643	4,185,905	1,101,738
Total	19,514,653	15,512,070	4,002,583
Southern:[2]			
Roundwood	15,816,102	11,423,509	4,392,593
Residues	7,004,828	5,775,414	1,229,414
Total	22,820,930	17,198,923	5,622,007
Both stations:			
Roundwood	30,043,112	22,749,674	7,293,438
Residues	12,292,471	9,961,319	2,331,152
Total	42,335,583	32,710,993	9,624,590

1/ States of Florida, Georgia, North Carolina, South Carolina, and Virginia.

2/ States of Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

able 7.--Round pulpwood production in Alabama, 1975

County	All species	Softwood	Hardwood
	--- Standard cords ---		
utauga	60,015	42,518	17,497
aldwin	137,356	104,642	32,714
arbour	108,126	91,848	16,278
ibb	68,806	54,541	14,265
lount	44,266	37,295	6,971
ullock	77,346	67,495	9,851
utler	136,643	92,207	44,436
alhoun	56,863	53,213	3,650
hambers	95,466	74,455	21,011
herokee	36,853	32,542	4,311
hilton	74,120	60,319	13,801
hoctaw	212,579	102,097	110,482
larke	178,526	86,369	92,157
lay	97,470	88,826	8,644
leburne	53,470	46,038	7,432
offee	72,477	57,581	14,896
olbert	12,749	10,065	2,684
onecuh	107,989	42,777	65,212
oosa	111,234	91,453	19,781
ovington	86,805	70,146	16,659
renshaw	96,700	71,919	24,781
ullman	76,647	66,551	10,096
ale	56,351	40,778	15,573
allas	76,763	47,260	29,503
e Kalb	21,912	13,991	7,921
more	46,260	37,237	9,023
scambia	147,261	101,957	45,304
owah	25,680	23,530	2,150
ayette	46,388	43,384	3,004
ranklin	49,688	26,242	23,446
eneva	46,786	34,472	12,314
reene	29,117	15,849	13,268
ale	40,533	22,814	17,719
enry	115,138	86,397	28,741
ouston	34,108	28,075	6,033
Jackson	21,901	6,448	15,453
Jefferson	44,782	37,639	7,143
Lamar	32,751	29,679	3,072
Lauderdale	18,213	4,659	13,554
Lawrence	5,924	3,095	2,829
Lee	87,181	81,281	5,900
Limestone	294	294	0
Lowndes	65,136	41,110	24,026
Macon	44,221	39,833	4,388
Madison	1,643	36	1,607
Marengo	131,280	74,357	56,923
Marion	52,682	38,214	14,468
Marshall	16,717	8,228	8,489
Mobile	67,038	55,667	11,371
Monroe	133,737	73,703	60,034
Montgomery	47,825	34,434	13,391
Morgan	7,215	5,819	1,396
Perry	68,183	41,323	26,860
Pickens	70,098	43,444	26,654
Pike	81,514	63,558	17,956
Randolph	75,274	67,173	8,101
Russell	46,301	44,214	2,087
St. Clair	86,193	78,806	7,387
Shelby	64,180	58,823	5,357
Sumter	64,348	32,231	32,117
Talledega	96,478	81,712	14,766
Tallapoosa	118,995	101,435	17,560
Tuscaloosa	38,418	35,612	2,806
Walker	81,998	74,337	7,661
Washington	102,272	62,238	40,034
Wilcox	89,670	56,424	33,246
Winston	67,214	59,874	7,340
All counties	4,668,167	3,402,583	1,265,584

Table 8.--Round pulpwood production in Arkansas, 1975

County [1]	All species	Softwood	Hardwood
	--- Standard cords ---		
Ashley	223,621	149,351	74,270
Baxter	113	0	113
Boone	3	3	0
Bradley	9,260	7,966	1,294
Calhoun	60,575	53,668	6,907
Chicot	2,623	6	2,617
Clark	66,104	44,700	21,404
Cleburne	13,339	10,525	2,814
Cleveland	70,733	49,803	20,930
Columbia	105,876	90,202	15,674
Conway	24,191	15,560	8,631
Craighead	2,678	1,277	1,401
Crawford	5	5	0
Crittenden	2,840	0	2,840
Cross	22	0	22
Dallas	78,243	47,237	31,006
Desha	8,488	105	8,383
Drew	109,676	50,254	59,422
Faulkner	290	207	83
Franklin	2	2	0
Fulton	37	37	0
Garland	49,327	35,128	14,199
Grant	62,763	41,877	20,886
Greene	513	513	0
Hempstead	54,999	39,828	15,171
Hot Spring	54,639	36,569	18,070
Howard	68,829	57,268	11,561
Independence	9,843	7,965	1,878
Izard	363	256	107
Jackson	190	16	174
Jefferson	51,421	33,636	17,785
Johnson	7,935	5,306	2,629
Lafayette	50,878	36,972	13,906
Lawrence	63	24	39
Lee	300	0	300
Lincoln	53,072	18,341	34,731
Little River	43,979	27,037	16,942
Logan	24,123	20,261	3,862
Lonoke	5,947	172	5,775
Miller	56,869	36,923	19,946
Monroe	290	290	0
Montgomery	18,236	13,675	4,561
Nevada	97,697	84,604	13,093
Newton	7	0	7
Ouachita	30,779	25,541	5,238
Perry	15,850	10,667	5,183
Phillips	654	7	647
Pike	65,057	50,474	14,583
Poinsett	2	0	2
Polk	46,129	32,600	13,529
Pope	20,268	11,417	8,851
Prairie	6,002	12	5,990
Pulaski	44,864	19,827	25,037
Randolph	5	0	5
St. Francis	5	3	2
Saline	50,607	29,798	20,809
Scott	36,245	27,935	8,310
Searcy	2	0	2
Sebastian	1,842	1,841	1
Sevier	52,168	38,056	14,112
Sharp	110	91	19
Stone	1,815	1,782	33
Union	86,114	68,254	17,860
Van Buren	9,190	7,658	1,532
White	8,664	4,750	3,914
Woodruff	171	4	167
Yell	16,214	11,924	4,290
All counties	1,983,759	1,360,210	623,549

1/ Counties with no pulpwood production are omitted.

ible 9.--Round pulpwood production in Florida, 1975

County 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
achua	69,693	60,627	9,066
aker	87,475	86,811	664
ay	42,032	41,664	368
radford	74,879	70,726	4,153
revard	265	265	0
alhoun	66,809	65,932	877
itrus	2,453	2,439	14
lay	24,302	22,248	2,054
ollier	7,431	7,403	28
olumbia	104,082	97,814	6,268
ade	4	4	0
ixie	60,796	53,563	7,233
uval	34,166	31,056	3,110
scambia	62,006	62,001	5
agler	35,372	33,531	1,841
ranklin	52,361	51,811	550
adsden	53,558	42,736	10,822
ilchrist	34,186	31,210	2,976
lades	4,812	4,812	0
ulf	11,437	10,592	845
amilton	83,549	80,040	3,509
ardee	14,904	14,234	670
endry	5,560	5,560	0
ernando	14,673	12,932	1,741
illsborough	1,898	1,254	644
olmes	62,867	59,396	3,471
ckson	91,599	84,604	6,995
fferson	47,756	45,073	2,683
fayette	21,658	21,616	42
Lake	8,229	8,051	178
Leon	52,730	50,380	2,350
Levy	70,699	43,081	27,618
Liberty	43,047	39,714	3,333
Madison	88,403	70,479	17,924
Manatee	4,180	4,152	28
Marion	102,222	78,737	23,485
Nassau	143,873	123,102	20,771
Okaloosa	46,868	45,460	1,408
Okeechobee	1,224	1,168	56
Orange	6,270	6,270	0
Osceola	10,637	10,637	0
Pasco	2,085	1,832	253
Pinellas	4	4	0
Polk	44,216	42,106	2,110
Putnam	32,606	28,506	4,100
St. Johns	92,719	86.446	6,273
Santa Rosa	70,004	70,004	0
Sarasota	1,900	1,900	0
Sumter	4,766	4,766	0
Suwannee	59,432	51,666	7,766
Taylor	228,344	215,227	13,117
Union	24,453	23,801	652
Volusia	35,880	35,030	850
Wakulla	30,198	30,198	0
Walton	94,220	86,065	8,155
Washington	62,906	59,684	3,222
All counties	2,534,698	2,320,420	214,278

1/ Counties with no pulpwood production are omitted.

Table 10.--Round pulpwood production in Georgia, 1975

County	All species	Softwood	Hardwood
	--- Standard cords ---		
Appling	66,792	62,539	4,253
Atkinson	52,764	52,724	40
Bacon	40,807	40,235	572
Baker	16,201	15,121	1,080
Baldwin	30,173	27,866	2,307
Banks	9,805	9,765	40
Barrow	17,837	17,717	120
Bartow	32,489	31,802	687
Ben Hill	45,532	41,700	3,832
Berrien	31,533	31,116	417
Bibb	4,840	4,840	0
Bleckley	21,073	17,114	3,959
Brantley	83,862	72,560	11,302
Brooks	28,254	26,116	2,138
Bryan	73,989	68,149	5,840
Bulloch	40,466	38,392	2,074
Burke	69,034	51,492	17,542
Butts	27,209	23,194	4,015
Calhoun	23,056	21,274	1,782
Camden	69,619	54,510	15,109
Candler	15,170	13,518	1,652
Carroll	48,853	47,024	1,829
Catoosa	2,718	2,146	572
Charlton	72,438	65,969	6,469
Chatham	18,600	14,729	3,871
Chattahoochee	46,425	32,607	13,818
Chattooga	34,838	23,498	11,340
Cherokee	43,098	42,191	907
Clarke	6,665	3,662	3,003
Clay	12,918	10,992	1,926
Clayton	1,720	1,620	100
Clinch	69,349	69,323	26
Cobb	13,937	13,184	753
Coffee	63,884	61,994	1,890
Colquitt	35,917	33,352	2,565
Columbia	20,392	17,755	2,637
Cook	20,118	19,134	984
Coweta	66,003	57,742	8,261
Crawford	68,337	56,813	11,524
Crisp	13,481	12,958	523
Dade	1,914	1,665	249
Dawson	9,612	8,753	859
Decatur	55,496	45,195	10,301
De Kalb	4,818	4,418	400
Dodge	69,476	64,031	5,445
Dooly	20,712	18,466	2,246
Dougherty	47,882	40,749	7,133
Douglas	18,322	15,865	2,457
Early	29,947	26,293	3,654
Echols	27,591	25,633	1,958
Effingham	42,655	33,172	9,483
Elbert	32,145	28,637	3,508
Emanuel	46,337	41,044	5,293
Evans	14,294	11,439	2,855
Fannin	13,534	10,832	2,702
Fayette	10,592	9,192	1,400
Floyd	40,729	33,540	7,189
Forsyth	10,651	10,459	192
Franklin	28,032	21,354	6,678
Fulton	18,834	17,491	1,343
Gilmer	26,824	22,180	4,644
Glascock	1,715	1,401	314
Glynn	89,909	65,481	24,428
Gordon	46,563	43,430	3,133
Grady	22,619	17,653	4,966
Greene	42,052	36,132	5,920
Gwinnett	17,843	16,865	978
Habersham	14,229	11,159	3,070
Hall	20,707	20,611	96
Hancock	44,952	33,872	11,080
Haralson	26,554	22,334	4,220
Harris	72,030	69,618	2,412
Hart	3,625	3,625	0
Heard	25,663	24,858	805
Henry	14,978	14,060	918
Houston	26,059	24,178	1,881
Irwin	2,250	2,200	50
Jackson	31,305	28,861	2,444
Jasper	49,648	48,641	1,007
Jeff Davis	43,817	34,732	9,085
Jefferson	38,919	35,324	3,595
Jenkins	27,455	24,437	3,018
Johnson	17,281	14,511	2,770
Jones	34,847	33,713	1,134
Lamar	12,842	12,485	357
Lanier	8,255	8,255	0
Laurens	69,176	55,109	14,067
Lee	5,588	5,504	84
Liberty	80,340	62,025	18,315
Lincoln	43,436	38,118	5,318
Long	46,839	43,740	3,099
Lowndes	30,697	30,676	21
Lumpkin	5,931	5,411	520
McDuffie	8,504	8,354	150
McIntosh	38,752	38,220	532
Macon	18,768	16,286	2,482
Madison	21,978	19,979	1,999
Marion	45,854	42,031	3,823
Meriwether	65,051	54,403	10,648
Miller	11,852	11,037	815
Mitchell	57,344	55,811	1,533
Monroe	52,288	50,503	1,785
Montgomery	21,362	21,357	5
Morgan	27,817	25,794	2,023
Murray	22,573	20,527	2,046
Muscogee	2,158	2,140	18

Table 10.--Round pulpwood production in Georgia, 1975 (continued)

County	All species	Softwood	Hardwood
	--- Standard cords ---		
Newton	11,392	10,662	730
Oconee	20,794	18,790	2,004
Oglethorpe	30,122	25,332	4,790
Paulding	31,547	29,350	2,197
Peach	3,751	3,751	0
Pickens	12,480	10,095	2,385
Pierce	42,396	36,873	5,523
Pike	17,278	17,200	78
Polk	24,941	22,226	2,715
Pulaski	27,355	24,717	2,638
Putnam	53,765	48,794	4,971
Quitman	16,551	15,770	781
Rabun	17,721	10,434	7,287
Randolph	62,605	47,253	15,352
Richmond	57,354	34,045	23,309
Rockdale	2,382	2,382	0
Schley	13,333	13,202	131
Screven	28,775	26,814	1,961
Seminole	12,913	9,730	3,183
Spalding	8,976	8,976	0
Stephens	17,836	14,778	3,058
Stewart	55,997	45,507	10,490
Sumter	41,062	38,509	2,553
Talbot	51,708	48,756	2,952
Taliaferro	25,210	20,146	5,064
Tattnall	32,580	31,951	629
Taylor	18,882	18,144	738
Telfair	71,018	66,598	4,420
Terrell	26,758	24,739	2,019
Thomas	67,004	53,906	13,098
Tift	5,554	5,154	400
Toombs	62,117	60,118	1,999
Towns	1,278	1,201	77
Treutlen	34,847	31,703	3,144
Troup	34,053	32,417	1,636
Turner	12,434	12,434	0
Twiggs	43,374	36,915	6,459
Union	7,540	6,484	1,056
Upson	25,390	24,899	491
Walker	17,105	15,089	2,016
Walton	17,140	15,094	2,046
Ware	102,022	99,959	2,063
Warren	33,663	30,911	2,752
Washington	58,517	47,444	11,073
Wayne	127,723	118,516	9,207
Webster	17,602	16,088	1,514
Wheeler	32,017	29,487	2,530
White	12,586	10,534	2,052
Whitfield	22,576	19,875	2,701
Wilcox	24,891	20,445	4,446
Wilkes	52,382	33,176	19,206
Wilkinson	46,340	39,727	6,613
Worth	40,456	37,063	3,393
All counties	5,179,111	4,578,469	600,642

Table 11.--Round pulpwood production in Louisiana, 1975

Parish 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
Acadia	4,137	3,363	774
Allen	53,519	46,560	6,959
Ascension	5,124	6	5,118
Assumption	985	0	985
Avoyelles	15,746	1,164	14,582
Beauregard	155,390	149,064	6,326
Bienville	157,946	137,018	20,928
Bossier	86,804	75,900	10,904
Caddo	31,274	24,270	7,004
Calcasieu	11,774	9,898	1,876
Caldwell	43,257	25,246	18,011
Catahoula	29,049	10,047	19,002
Claiborne	100,772	83,731	17,041
Concordia	39,622	0	39,622
De Soto	112,608	100,219	12,389
East Baton Rouge	4,282	2,333	1,949
East Carroll	29,665	19	29,646
East Feliciana	35,954	27,357	8,597
Evangeline	21,070	12,772	8,298
Franklin	4,018	155	3,863
Grant	74,747	55,840	18,907
Iberia	675	11	664
Iberville	713	22	691
Jackson	78,107	60,496	17,611
Jefferson	26	10	16
Jefferson Davis	5,880	3,680	2,200
Lafourche	10	10	0
La Salle	75,393	54,028	21,365
Lincoln	99,741	86,638	13,103
Livingston	79,575	57,892	21,683
Madison	21,034	18	21,016
Morehouse	39,586	20,791	18,795
Natchitoches	96,643	88,378	8,265
Orleans	5	5	0
Ouachita	59,223	38,610	20,613
Pointe Coupee	16,369	9	16,360
Rapides	136,646	108,465	28,181
Red River	31,051	23,135	7,916
Richland	3,728	28	3,700
Sabine	124,793	118,280	6,513
St. Charles	18	0	18
St. Helena	78,590	66,046	12,544
St. James	135	0	135
St. John the Baptist	27	20	7
St. Landry	6,927	270	6,657
St. Martin	206	40	166
St. Mary	39	34	5
St. Tammany	31,699	30,506	1,193
Tangipahoa	54,173	46,276	7,897
Tensas	33,851	77	33,774
Union	169,362	114,761	54,601
Vermilion	234	179	55
Vernon	178,840	172,507	6,333
Washington	108,865	100,459	8,406
Webster	53,917	44,269	9,648
West Baton Rouge	665	0	665
West Carroll	1,262	66	1,196
West Feliciana	16,700	4,494	12,206
Winn	133,496	103,037	30,459
All parishes	2,755,947	2,108,509	647,438

1/ Parishes with no pulpwood production are omitted.

Table 12.--Round pulpwood production in Mississippi, 1975

County 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
Adams	31,991	1,037	30,954
Alcorn	5,404	4,779	625
Amite	86,664	65,426	21,238
Attala	127,383	93,950	33,433
Benton	4,177	3,236	941
Bolivar	219	1	218
Calhoun	20,364	4,228	16,136
Carroll	29,819	18,522	11,297
Chickasaw	9,905	9,895	10
Choctaw	41,982	27,031	14,951
Claiborne	35,183	7,825	27,358
Clarke	121,877	61,210	60,667
Clay	10,735	9,130	1,605
Coahoma	583	2	581
Copiah	100,297	64,897	35,400
Covington	50,305	34,529	15,776
De Soto	12	12	0
Forrest	42,921	31,595	11,326
Franklin	53,792	25,721	28,071
George	28,083	19,901	8,182
Greene	77,043	49,768	27,275
Grenada	14,678	11,675	3,003
Hancock	11,740	10,414	1,326
Harrison	26,909	24,501	2,408
Hinds	32,553	13,633	18,920
Holmes	48,316	29,744	18,572
Humphreys	796	12	784
Issaquena	21,159	8	21,151
Itawamba	23,808	21,577	2,231
Jackson	32,146	28,009	4,137
Jasper	93,074	54,692	38,382
Jefferson	56,293	19,173	37,120
Jefferson Davis	45,868	39,069	6,799
Jones	42,765	22,403	20,362
Kemper	94,083	45,502	48,581
Lafayette	23,164	13,317	9,847
Lamar	46,237	38,918	7,319
Lauderdale	81,884	46,602	35,282
Lawrence	84,966	67,307	17,659
Leake	83,510	59,918	23,592
Lee	2,939	2,547	392
Leflore	3,976	2,178	1,798
Lincoln	89,931	64,837	25,094
Lowndes	3,230	1,863	1,367
Madison	39,301	24,875	14,426
Marion	71,874	57,176	14,698
Marshall	6,636	6,615	21
Monroe	13,687	11,962	1,725
Montgomery	31,064	23,680	7,384
Neshoba	81,651	48,688	32,963
Newton	92,671	54,506	38,165
Noxubee	53,362	35,507	17,855
Oktibbeha	27,406	18,708	8,698
Panola	4,674	2,069	2,605
Pearl River	55,969	40,940	15,029
Perry	66,354	50,034	16,320
Pike	86,794	72,548	14,246
Pontotoc	5,327	5,220	107
Prentiss	10,871	8,280	2,591
Rankin	80,014	53,883	26,131
Scott	59,144	46,759	12,385
Sharkey	30	16	14
Simpson	95,354	73,051	22,303
Smith	49,271	37,004	12,267
Stone	53,665	43,140	10,525
Sunflower	30	30	0
Tallahatchie	2,796	752	2,044
Tate	2,623	306	2,317
Tippah	15,898	15,723	175
Tishomingo	41,562	32,752	8,310
Tunica	8,605	9	8,596
Union	3,402	3,101	301
Walthall	48,474	31,174	17,300
Warren	15,938	1,085	14,853
Washington	8,760	24	8,736
Wayne	81,672	52,780	28,892
Webster	30,937	29,379	1,558
Wilkinson	77,940	31,427	46,513
Winston	61,789	39,246	22,543
Yalobusha	12,906	8,707	4,199
Yazoo	37,786	5,625	32,161
All counties	3,279,001	2,117,375	1,161,626

1/ Counties with no pulpwood production are omitted.

Table 13.--Round pulpwood production in North Carolina, 1975

County	All species	Softwood	Hardwood
	--- Standard cords ---		
Alamance	9,396	6,772	2,624
Alexander	1,904	1,619	285
Alleghany	37	37	0
Anson	68,296	44,982	23,314
Ashe	105	19	86
Avery	544	21	523
Beaufort	55,122	33,873	21,249
Bertie	55,712	23,211	32,501
Bladen	74,485	36,169	38,316
Brunswick	73,351	58,944	14,407
Buncombe	37,141	21,457	15,684
Burke	38,204	25,165	13,039
Cabarrus	9,775	7,287	2,488
Caldwell	4,596	2,255	2,341
Camden	21,023	8,659	12,364
Carteret	23,588	21,126	2,462
Caswell	5,403	348	5,055
Catawba	8,075	7,512	563
Chatham	56,954	38,288	18,666
Cherokee	30,227	18,768	11,459
Chowan	6,137	1,791	4,346
Clay	5,485	4,598	887
Cleveland	21,066	18,661	2,405
Columbus	69,463	47,828	21,635
Craven	82,730	63,815	18,915
Cumberland	29,215	19,569	9,646
Currituck	2,965	115	2,850
Dare	3,383	3,258	125
Davidson	14,513	9,806	4,707
Davie	2,630	2,376	254
Duplin	43,033	28,828	14,205
Durham	22,721	18,394	4,327
Edgecombe	18,520	12,689	5,831
Forsyth	7,044	5,848	1,196
Franklin	42,343	26,952	15,391
Gaston	14,945	12,878	2,067
Gates	27,812	15,139	12,673
Graham	4,334	964	3,370
Granville	54,988	36,691	18,297
Greene	5,501	3,614	1,887
Guilford	8,277	5,567	2,710
Halifax	49,842	27,407	22,435
Harnett	13,748	7,505	6,243
Haywood	40,455	13,744	26,711
Henderson	16,562	6,459	10,103
Hertford	28,132	8,698	19,434
Hoke	19,692	15,877	3,815
Hyde	25,463	20,015	5,448
Iredell	34,066	26,494	7,572
Jackson	3,518	605	2,913
Johnston	18,123	6,516	11,607
Jones	44,851	36,413	8,438
Lee	36,580	21,269	15,311
Lenoir	40,263	30,919	9,344
Lincoln	31,154	26,235	4,919
McDowell	11,971	6,425	5,546
Macon	3,525	1,287	2,238
Madison	3,914	2,403	1,511
Martin	20,051	13,613	6,438
Mecklenberg	7,602	6,521	1,081
Mitchell	3,210	1,327	1,883
Montgomery	21,298	10,619	10,679
Moore	30,422	23,276	7,146
Nash	40,294	20,049	20,245
New Hanover	8,008	6,949	1,059
Northampton	44,444	13,520	30,924
Onslow	71,788	62,893	8,895
Orange	17,676	12,143	5,533
Pamlico	38,088	29,017	9,071
Pasquotank	5,544	2,555	2,989
Pender	41,976	31,426	10,550
Perquimans	9,372	2,258	7,114
Person	29,215	17,939	11,276
Pitt	33,310	22,208	11,102
Polk	27,948	16,538	11,410
Randolph	8,313	5,064	3,249
Richmond	26,065	15,975	10,090
Robeson	38,248	23,118	15,130
Rockingham	4,938	2,895	2,043
Rowan	9,285	8,238	1,047
Rutherford	49,933	34,825	15,108
Sampson	58,079	35,022	23,057
Scotland	40,154	35,549	4,605
Stanly	25,282	17,703	7,579
Stokes	5,470	3,430	2,040
Surry	2,335	1,552	783
Swain	6,297	3,672	2,625
Transylvania	8,994	2,520	6,474
Tyrrell	7,435	6,550	885
Union	33,030	22,480	10,550
Vance	5,057	3,797	1,260
Wake	41,746	27,361	14,385
Warren	27,920	22,878	5,042
Washington	25,000	14,050	10,950
Watauga	15	9	6
Wayne	15,059	8,894	6,165
Wilkes	21,987	11,410	10,577
Wilson	17,171	10,361	6,810
Yadkin	5,265	4,277	988
Yancey	10,812	2,770	8,042
All counties	2,427,038	1,571,415	855,623

Table 14.--Round pulpwood production in Oklahoma, 1975

County 1/	All species	Softwood	Hardwood	County 1/	All species	Softwood	Hardwood
	--- Standard cords ---				--- Standard cords ---		
Blaine	116	0	116	Mayes	3,116	0	3,116
Carter	61	0	61	Okfuskee	1,760	0	1,760
Choctaw	14,989	10,736	4,253	Oklahoma	32	0	32
Cleveland	67	0	67	Okmulgee	82	0	82
Garvin	1,081	0	1,081	Pottawatomie	440	0	440
Hughes	27	0	27	Pushmataha	38,788	22,494	16,294
Johnston	62	0	62	Roger Mills	193	0	193
Le Flore	26,859	21,457	5,402	Stephens	285	0	285
Lincoln	4,673	0	4,673	Woodward	43	0	43
McClain	251	0	251	All counties	158,901	110,453	48,448
McCurtain	65,976	55,766	10,210				

1/ Counties with no pulpwood production are omitted.

Table 15.--Round pulpwood production in South Carolina, 1975

County	All species	Softwood	Hardwood	County	All species	Softwood	Hardwood
	--- Standard cords ---				--- Standard cords ---		
Abbeville	63,728	56,022	7,706	Jasper	31,793	20,164	11,629
Aiken	56,228	51,434	4,794	Kershaw	109,515	80,727	28,788
Allendale	33,430	32,267	1,163	Lancaster	73,730	58,381	15,349
Anderson	67,652	56,935	10,717	Laurens	66,873	59,200	7,673
Bamberg	24,952	21,220	3,732	Lee	12,166	9,302	2,864
Barnwell	46,724	46,115	609	Lexington	44,129	41,049	3,080
Beaufort	3,704	3,504	200	McCormick	91,263	64,892	26,371
Berkeley	55,279	49,011	6,268	Marion	21,022	11,953	9,069
Calhoun	5,409	4,988	421	Marlboro	34,731	18,342	16,389
Charleston	38,260	32,278	5,982	Newberry	179,342	165,895	13,447
Cherokee	19,369	17,850	1,519	Oconee	47,058	39,956	7,102
Chester	107,121	90,185	16,936	Orangeburg	94,380	61,097	33,283
Chesterfield	90,503	68,732	21,771	Pickens	30,568	11,784	18,784
Clarendon	76,393	67,988	8,405	Richland	59,769	53,757	6,012
Colleton	81,754	58,835	22,919	Saluda	51,369	34,637	16,732
Darlington	23,434	9,542	13,892	Spartanburg	63,200	54,348	8,852
Dillon	8,708	6,766	1,942	Sumter	27,814	24,359	3,455
Dorchester	42,681	29,526	13,155	Union	62,231	49,261	12,970
Edgefield	57,728	51,766	5,962	Williamsburg	61,601	40,372	21,229
Fairfield	121,347	108,158	13,189	York	62,531	50,915	11,616
Florence	28,660	12,771	15,889	All counties	2,657,298	2,134,090	523,208
Georgetown	114,841	98,298	16,543				
Greenville	37,893	31,160	6,733				
Greenwood	85,962	69,958	16,004				
Hampton	56,025	45,496	10,529				
Horry	84,428	62,894	21,534				

Table 16.--Round pulpwood production in Tennessee, 1975

County 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
Anderson	2,780	2,780	0
Benton	11,763	32	11,731
Bledsoe	2,895	2,818	77
Blount	11,280	9,967	1,313
Bradley	18,645	17,808	837
Campbell	420	101	319
Carroll	12,932	682	12,250
Carter	4,152	157	3,995
Cheatham	1,366	0	1,366
Chester	2,298	1,712	586
Claiborne	1,750	93	1,657
Clay	267	0	267
Cocke	22,793	11,618	11,175
Coffee	2,941	2,941	0
Cumberland	14,405	8,978	5,427
Decatur	6,568	483	6,085
Dickson	311	7	304
Fayette	234	91	143
Fentress	8,396	2,417	5,979
Franklin	4,000	0	4,000
Gibson	1,322	13	1,309
Giles	10.808	3,784	7,024
Grainger	547	21	526
Greene	3,970	927	3,043
Grundy	13,169	5,596	7,573
Hamblen	1,105	303	802
Hamilton	10,711	6,220	4,491
Hancock	4,915	185	4,730
Hardeman	1,363	1,282	81
Hardin	19,145	10,877	8,268
Hawkins	3,278	124	3,154
Henderson	8,278	8,014	264
Henry	41,667	28	41,639
Hickman	5,117	0	5,117
Houston	15,862	0	15,862
Humphreys	98,659	0	98,659
Jefferson	297	217	80
Johnson	1,857	70	1,787
Knox	6,249	4,725	1,524
Lauderdale	1,500	0	1,500
Lawrence	10,770	3,646	7,124
Lewis	956	740	216
Loudon	2,628	1,922	706
McMinn	24,928	23,054	1,874
McNairy	8,290	6,182	2,108
Macon	1,288	0	1,288
Madison	166	163	3
Marion	4,178	0	4,178
Meigs	9,257	6,245	3,012
Monroe	17,405	15,613	1,792
Montgomery	69	0	69
Morgan	10,787	4,604	6,183
Obion	481	0	481
Pickett	2,081	0	2,081
Polk	8,823	7,332	1,491
Putnam	3,819	904	2,915
Rhea	7,492	3,758	3,734
Roane	18,467	14,055	4,412
Robertson	6	6	0
Scott	8,643	6,171	2,472
Sequatchie	2,275	832	1,443
Sevier	853	802	51
Stewart	29	0	29
Sullivan	4,368	164	4,204
Tipton	151	0	151
Unicoi	2,185	82	2,103
Warren	1,552	1,472	80
Washington	1,420	54	1,366
Wayne	24,692	6,567	18,125
Weakley	979	7	972
White	2,728	0	2,728
All counties	561,781	209,446	352,335

1/ Counties with no pulpwood production are omitted.

Table 17.--Round pulpwood production in Texas, 1975

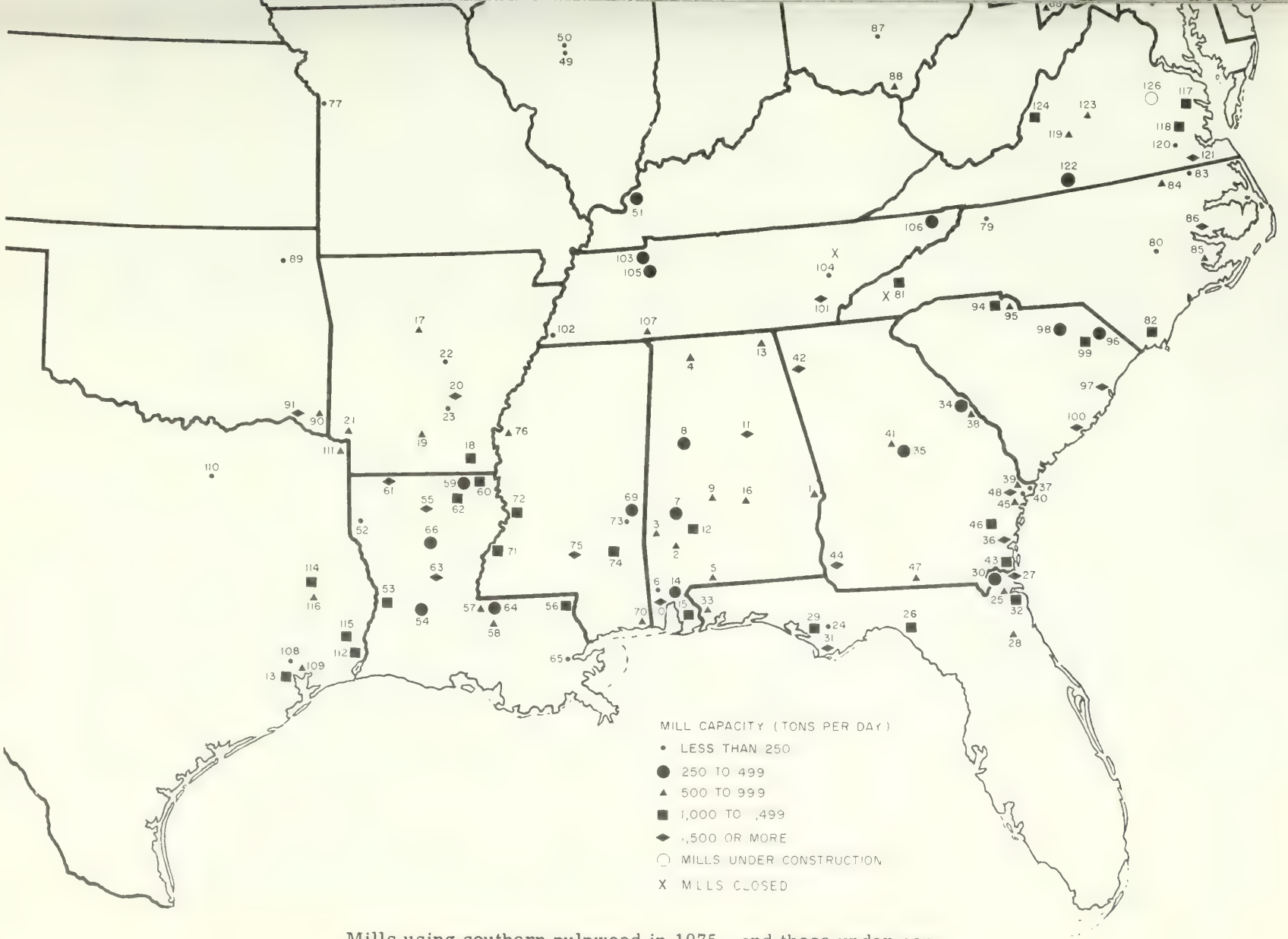
County 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
Anderson	31,239	28,614	2,625
Angelina	102,368	92,260	10,108
Bastrop	1,185	1,079	106
Bowie	30,684	23,879	6,805
Brazoria	309	50	259
Brazos	284	0	284
Camp	17,790	17,105	685
Cass	87,722	70,138	17,584
Chambers	519	503	16
Cherokee	109,970	102,950	7,020
Franklin	1,091	535	556
Freestone	2	2	0
Gregg	29,467	26,299	3,168
Grimes	12,735	12,541	194
Hardin	82,348	67,363	14,985
Harris	13,424	10,809	2,615
Harrison	116,086	107,399	8,687
Hopkins	18	4	14
Houston	95,579	86,045	9,534
Jasper	124,992	101.423	23,569
Jefferson	12,314	5,073	7,241
Leon	572	191	381
Liberty	54,678	45,288	9,390
Marion	86,993	71,714	15,279
Montgomery	55,789	50,944	4,845
Morris	33,209	31,293	1,916
Nacogdoches	95,123	85,824	9,299
Newton	138,256	112,719	25,537
Orange	11,782	11,153	629
Panola	74,845	67,251	7,594
Polk	135,779	114,407	21,372
Red River	15,232	12,022	3,210
Rusk	68,867	61,980	6,887
Sabine	28,607	25,118	3,489
San Augustine	79,060	67,514	11,546
San Jacinto	26,578	24,153	2,425
Shelby	146,356	130,544	15,812
Smith	73,893	72,643	1,250
Titus	2,374	1,787	587
Trinity	150,463	148,177	2,286
Tyler	122,999	101,074	21,925
Upshur	47,048	44,139	2,909
Van Zandt	44	44	0
Walker	70,064	63,849	6,215
Waller	89	0	89
Wood	19,720	17,034	2,686
All counties	2,408,546	2,114,933	293,613

1/ Counties with no pulpwood production are omitted.

Table 18.--Round pulpwood production in Virginia, 1975

County 1/	All species	Softwood	Hardwood
	--- Standard cords ---		
Accomack	14,069	13,955	114
Albemarle	26,870	13,048	13,822
Alleghany	19,518	3,398	16,120
Amelia	21,142	11,100	10,042
Amherst	30,389	10,100	20,289
Appomattox	34,588	18,279	16,309
Arlington	20	0	20
Augusta	28,803	5,211	23,592
Bath	24,402	3,679	20,723
Bedford	46,573	8,606	37,967
Bland	14	0	14
Botetourt	27,258	5,108	22,150
Brunswick	53,510	41,545	11,965
Buchanan	127	87	40
Buckingham	93,828	47,212	46,616
Campbell	35,003	18,794	16,209
Caroline	20,594	19,347	1,247
Carroll	913	761	152
Charles City	14,984	9,165	5,819
Charlotte	29,652	15,801	13,851
Chesapeake	7,180	4,052	3,128
Chesterfield	32,302	7,751	24,551
Clarke	1,368	444	924
Craig	13,990	3,943	10,047
Culpeper	2,375	2,121	254
Cumberland	27,827	22,717	5,110
Dinwiddie	22,759	4,708	18,051
Essex	6,753	5,671	1,082
Fairfax	84	84	0
Fauquier	8,280	8,220	60
Floyd	13,463	1,308	12,155
Fluvanna	19,733	12,744	6,989
Franklin	23,666	8,610	15,056
Frederick	8,240	4,988	3,252
Giles	12	0	12
Gloucester	3,839	2,677	1,162
Goochland	15,130	13,258	1,872
Grayson	436	17	419
Greene	962	692	270
Greensville	26,952	11,660	15,292
Halifax	24,105	16,578	7,527
Hanover	14,682	13,610	1,072
Henrico	3,527	2,377	1,150
Henry	11,310	5,552	5,758
Highland	5,001	762	4,239
Isle of Wight	24,933	4,725	20,208
James City	2,523	1,204	1,319
King and Queen	28,297	20,248	8,049
King George	2,190	1,693	497
King William	8,293	5,622	2,671
Lancaster	794	765	29
Lee	7,075	268	6,807
Louisa	16,283	11,776	4,507
Lunenburg	55,385	39,400	15,985
Madison	11	8	3
Mathews	248	165	83
Mecklenburg	42,407	36,005	6,402
Middlesex	3,616	2,667	949
Montgomery	1,444	89	1,355
Nelson	48,498	14,222	34,276
New Kent	17,154	10,985	6,169
Newport News	112	28	84
Northampton	479	479	0
Northumberland	547	495	52
Nottoway	35,197	26,412	8,785
Orange	6,413	5,317	1,096
Page	418	378	40
Patrick	2,498	1,206	1,292
Pittsylvania	42,242	21,604	20,638
Powhatan	3,788	2,021	1,767
Prince Edward	38,609	22,931	15,678
Prince George	20,357	7,141	13,216
Prince William	7,336	6,676	660
Pulaski	4	4	0
Richmond	2,149	1,532	617
Roanoke	1,707	388	1,319
Rockbridge	29,316	8,948	20,368
Rockingham	3,278	1,135	2,143
Russell	113	4	109
Scott	2,399	91	2,308
Shenandoah	2,420	1,234	1,186
Smyth	3,919	148	3,771
Southampton	44,985	17,068	27,917
Spotsylvania	14,801	11,677	3,124
Stafford	3,039	3,007	32
Suffolk	17,416	8,023	9,393
Surry	22,865	8,449	14,416
Sussex	24,254	8,630	15,624
Tazewell	6	0	6
Virginia Beach	1,338	154	1,184
Warren	3,612	2,517	1,095
Washington	4,790	181	4,609
Westmoreland	2,635	2,328	307
Wise	5,551	210	5,341
Wythe	1,529	58	1,471
York	3,359	1,715	1,644
All counties	1,428,865	721,771	707,094

1/ Counties with no pulpwood production are omitted.


MILL CAPACITY (TONS PER DAY)
• LESS THAN 250
● 250 TO 499
▲ 500 TO 999
■ 1,000 TO 1,499
◆ 1,500 OR MORE
○ MILLS UNDER CONSTRUCTION
X MILLS CLOSED

Mills using southern pulpwood in 1975, and those under construction. Numbers at mill locations correspond to numbers in tables 19 and 20.

Table 19.--Mills using southern pulpwood in 1975, by process and capacity

Location	Map code 1/	Company	Pulping capacity, 24 hours 2/				
			All processes	Sulfate	Groundwood: and other mechanical:	Semi-chemical	Soda and sulfite
			Tons				
ALABAMA							
Mahrt	(1)	Alabama Kraft Co., Div. Ga. Kraft Co.	975	975	--	--	--
Jackson	(2)	Allied Paper Inc.	500	500	--	--	--
Naheola	(3)	American Can Co.	900	900	--	--	--
Courtland	(4)	Champion International Corp.	500	500	--	--	--
Brewton	(5)	Container Corp. of America	800	800	--	--	--
Mobile	(6)	GAF Corp.	50	--	50	--	--
Demopolis	(7)	Gulf States Paper Corp.	400	400	--	--	--
Tuscaloosa	(8)	Gulf States Paper Corp.	450	450	--	--	--
Riverdale	(9)	Hammermill Paper Co., Riverdale Div.	530	530	--	--	--
Mobile	(10)	International Paper Co.	1,500	1,200	300	--	--
Coosa Pines	(11)	Kimberly-Clark Corp., Coosa River Newsprint Div.	1,590	650	940	--	--
Pine Hill	(12)	McMillan Bloedel Inc.	1,100	1,100	--	--	--
Stevenson	(13)	Mead Paperboard	650	--	--	650	--
Mobile	(14)	National Gypsum Co.	375	--	200	175	--
Mobile	(15)	Scott Paper Co.	1,400	1,400	--	--	--
Montgomery	(16)	Union Camp Corp.	930	930	--	--	--
		Total	12,650	10,335	1,490	825	--
ARKANSAS							
Morrilton	(17)	Arkansas Kraft Corp.	800	800	--	--	--
Crossett	(18)	Georgia-Pacific Corp. Crossett Division-Paper	1,410	1,410	--	--	--
Camden	(19)	International Paper Co.	750	750	--	--	--
Pine Bluff	(20)	International Paper Co.	1,700	1,300	400	--	--
Ashdown	(21)	Nekoosa-Edwards Paper Co., Inc.	550	550	--	--	--
Little Rock	(22)	Superwood Corp.	140	--	140	--	--
Pine Bluff	(23)	Weyerhaeuser Co.	150	150	--	--	--
		Total	5,500	4,960	540	--	--
FLORIDA							
Blountstown	(24)	Abitibi Corp.	140	--	140	--	--
Jacksonville	(25)	Alton Box Board Co.	625	625	--	--	--
Foley	(26)	The Buckeye Cellulose Corp.	1,077	1,077	--	--	--
Fernandina Beach	(27)	Container Corp. of America	1,700	1,700	--	--	--
Palatka	(28)	Hudson Pulp and Paper Corp.	950	950	--	--	--
Panama City	(29)	International Paper Co.	1,415	1,415	--	--	--
Fernandina Beach	(30)	I.T.T. Rayonier Inc.	400	--	--	--	400
Port St. Joe	(31)	St. Joe Paper Co.	1,700	1,700	--	--	--
Jacksonville	(32)	St. Regis Paper Co.	1,400	1,400	--	--	--
Pensacola	(33)	St. Regis Paper Co.	900	900	--	--	--
		Total	10,307	9,767	140	--	400
GEORGIA							
Augusta	(34)	Abitibi Southern Corp.	375	--	375	--	--
Macon	(35)	Armstrong Cork Co.	400	--	400	--	--
Brunswick	(36)	Brunswick Pulp and Paper Co.	1,600	1,600	--	--	--
Savannah	(37)	Certain-teed Products Corp.	80	--	--	80	--
Augusta	(38)	Continental Can Co., Inc.	700	700	--	--	--
Port Wentworth	(39)	Continental Can Co., Inc.	600	600	--	--	--
Savannah	(40)	GAF Corp.	48	--	48	--	--
Macon	(41)	Georgia Kraft Co., Mead Div.	900	900	--	--	--
Rome	(42)	Georgia Kraft Co., Krannert Div.	1,600	1,600	--	--	--
St. Marys	(43)	Gilman Paper Co., St. Marys Kraft Div.	1,100	1,100	--	--	--
Cedar Springs	(44)	Great Southern Paper Co.	2,025	1,700	--	325	--
Riceboro	(45)	Interstate Paper Corp.	550	550	--	--	--
Jesup	(46)	I.T.T. Rayonier Inc.	1,266	1,266	--	--	--
Valdosta	(47)	Owens-Illinois, Forest Products Div.	875	875	--	--	--
Savannah	(48)	Union Camp Corp.	3,000	2,600	--	400	--
		Total	15,119	13,491	823	805	--
ILLINOIS							
Wilmington	(49)	The Celotex Corp.	150	--	150	--	--
Joliet	(50)	GAF Corp.	240	--	240	--	--
		Total	390	--	390	--	--
KENTUCKY							
Hawesville	(51)	WesCor Corp.	300	--	--	300	--
		Total	300	--	--	300	--

Table 19.--Mills using southern pulpwood in 1975, by process and capacity (Continued)

Location	Map code[1]	Company	Pulping capacity, 24 hours[2]				
			All processes	Sulfate	Groundwood: and other mechanical:	Semi-chemical	Soda and sulfite
			Tons				
LOUISIANA							
Shreveport	(52)	Bird and Son, Inc.	225	--	--	225	--
DeRidder	(53)	Boise Southern Co.	1,300	950	350	--	--
Elizabeth	(54)	Calcasieu Paper Co.	305	305	--	--	--
Hodge	(55)	Continental Can Co., Inc.	1,650	1,400	--	250	--
Bogalusa	(56)	Crown Zellerbach Corp.	1,435	1,300	--	135	--
St. Francisville	(57)	Crown Zellerbach Corp.	500	500	--	--	--
Port Hudson	(58)	Georgia-Pacific Corp., Port Hudson Div.	600	600	--	--	--
Bastrop	(59)	International Paper Co. (Bastrop Mill)	485	--	--	485	--
Bastrop	(60)	International Paper Co. (Louisiana Mill)	1,100	1,100	--	--	--
Springhill	(61)	International Paper Co.	1,625	1,625	--	--	--
West Monroe	(62)	Olinkraft, Inc.	1,400	1,150	--	250	--
Pineville	(63)	Pineville Kraft Corp.	900	900	--	--	--
St. Francisville	(64)	St. Francisville Paper Co.	440	220	220	--	--
New Orleans	(65)	Southern Johns-Manville Products Corp.	130	--	130	--	--
Campti	(66)	Western Kraft Corp.	400	400	--	--	--
		Total	12,495	10,450	700	1,345	--
MARYLAND							
Finksburg	(67)	Congoleum Industries, Inc.	45	--	45	--	--
Luke	(68)	Westvaco Corp.	789	789	--	--	--
		Total	834	789	45	--	--
MISSISSIPPI							
Meridian	(69)	The Flintkote Co.	250	--	200	50	--
Moss Point	(70)	International Paper Co.	700	700	--	--	--
Natchez	(71)	International Paper Co.	1,000	1,000	--	--	--
Vicksburg	(72)	International Paper Co.	1,200	1,200	--	--	--
Meridian	(73)	Kroehler Mfg. Co. of Miss., Inc.	80	--	80	--	--
Laurel	(74)	Masonite Corp.	1,200	--	1,200	--	--
Monticello	(75)	St. Regis Paper Co.	1,620	1,620	--	--	--
Greenville	(76)	United States Gypsum Co.	500	--	500	--	--
		Total	6,550	4,520	1,980	50	--
MISSOURI							
Kansas City	(77)	GAF Corp.	110	--	110	--	--
		Total	110	--	110	--	--
NEW JERSEY							
Gloucester City	(78)	GAF Corp.	192	--	192	--	--
		Total	192	--	192	--	--
NORTH CAROLINA							
Roaring River	(79)	Abitibi Corp.	120	--	120	--	--
Goldsboro	(80)	The Celotex Corp.	110	--	110	--	--
Canton	(81)	Champion International Corp.	1,385	1,385	--	--	--
Riegelwood	(82)	Federal Paper Board Co., Inc.	1,200	1,200	--	--	--
Conway	(83)	Georgia-Pacific Corp.	200	--	200	--	--
Roanoke Rapids	(84)	Hoerner Waldorf Corp.	940	940	--	--	--
New Bern	(85)	Weyerhaeuser Co.	750	750	--	--	--
Plymouth	(86)	Weyerhaeuser Co.	1,500	1,250	--	250	--
		Total	6,205	5,525	430	250	--
OHIO							
Milan	(87)	Certain-teed Products Corp.	90	--	90	--	--
Chillicothe	(88)	The Mead Corp.	600	600	--	--	--
		Total	690	600	90	--	--
OKLAHOMA							
Pryor	(89)	Georgia-Pacific Corp., Gypsum Div.	150	--	150	--	--
Broken Bow	(90)	Weyerhaeuser Co., Craig Plant	520	--	520	--	--
Valiant	(91)	Weyerhaeuser Co.	1,650	1,300	--	350	--
		Total	2,320	1,300	670	350	--
PENNSYLVANIA							
Roaring Spring	(92)	Appleton Papers Inc.	180	180	--	--	--
Spring Grove	(93)	P. H. Glatfelter Co.	500	500	--	--	--
		Total	680	680	--	--	--

Table 19.--Mills using southern pulpwood in 1975, by process and capacity (Continued)

Location	Map code 1/	Company	Pulping capacity, 24 hours 2/				
			All processes	Sulfate	Groundwood: and other mechanical:	Semi-chemical	Soda and sulfite
			Tons				
SOUTH CAROLINA							
Catawba	(94)	Bowaters Carolina Corp.	1,150	1,000	150	--	--
Catawba	(95)	Catawba Newsprint Co.	500	--	500	--	--
Marion	(96)	The Celotex Corp.	360	--	360	--	--
Georgetown	(97)	International Paper Co.	2,130	1,650	--	480	--
Hartsville	(98)	Sonoco Products Co.	420	--	--	420	--
Florence	(99)	South Carolina Industries, Inc.	1,150	1,150	--	--	--
Charleston	(100)	Westvaco Corp.	1,950	1,950	--	--	--
		Total	7,660	5,750	1,010	900	--
TENNESSEE							
Calhoun	(101)	Bowaters Southern Paper Corp.	1,625	500	925	200	--
Memphis	(102)	The Celotex Corp.	50	--	50	--	--
Paris	(103)	The Celotex Corp.	300	--	--	300	--
Harriman	(104)	Harriman Paperboard Corp.	190	--	--	190	--
New Johnsonville	(105)	Inland Container Corp.	450	--	--	450	--
Kingsport	(106)	Mead Paper	250	--	--	--	250
Counce	(107)	Tennessee River Pulp and Paper Co.	800	800	--	--	--
		Total	3,665	1,300	975	1,140	250
TEXAS							
Houston	(108)	The Celotex Corp.	50	--	50	--	--
Pasadena	(109)	Champion International Corp.	930	850	80	--	--
Dallas	(110)	GAF Corp.	70	--	70	--	--
Texarkana	(111)	International Paper Co.	575	575	--	--	--
Orange	(112)	Owens-Illinois, Forest Products Div.	1,000	1,000	--	--	--
Houston	(113)	Southland Paper Mills, Inc.	1,450	650	800	--	--
Lufkin	(114)	Southland Paper Mills, Inc.	1,250	400	850	--	--
Evadale	(115)	Temple-EasTex Inc.	1,350	1,350	--	--	--
Diboll	(116)	Temple Industries, Fiber Products Div.	620	--	620	--	--
		Total	7,295	4,825	2,470	--	--
VIRGINIA							
West Point	(117)	The Chesapeake Corp. of Virginia	1,150	1,150	--	--	--
Hopewell	(118)	Continental Can Co., Inc.	1,054	874	--	180	--
Big Island	(119)	Owens-Illinois, Forest Products Div.	500	--	--	500	--
Jarratt	(120)	Southern Johns-Manville Products Corp.	240	--	240	--	--
Franklin	(121)	Union Camp Corp.	1,750	1,750	--	--	--
Danville	(122)	United States Gypsum Co.	375	--	375	--	--
Riverville	(123)	Virginia Fiber Corp.	510	--	--	510	--
Covington	(124)	Westvaco Corp.	1,210	1,050	--	160	--
		Total	6,789	4,824	615	1,350	--
WISCONSIN							
Port Edwards	(125)	Nekoosa Edwards Papers Inc.	235	--	--	--	235
		Total	235	--	--	--	235
		All States	99,986	79,116	12,670	7,315	885

1/ Corresponds to numbers at locations on mill capacity map, page 17.
2/ Southern Pulp and Paper Manufacturer, vol. 38, No. 10 (October 1975); and other sources.

Table 20.--Pulpmills under construction in the South

Location	Map code 1/	Company	Pulping capacity, 24 hours
			Tons
VIRGINIA			
Doswell	(126)	Weyerhaeuser Co.	300

1/ Corresponds to numbers at locations on mill capacity map, page 17.

Bellamy, Thomas R.
1976. Southern pulpwood production, 1975. USDA For. Serv. Resour. Bull. SE-37, 21 p. Southeast. For. Exp. Stn., Asheville, N.C.

Southern pulpwood production in 1975 dropped a record 14 percent from the previous year. A 16-percent drop in roundwood accounted for over 80 percent of the total decline. Usable wood residues dropped 9 percent, primarily from hardwoods. Of the 42.3 million cords produced, 30 million were roundwood and 12 million were residues. Pulping capacity for the region increased 2 percent to 96,555 tons per day.

Keywords: Roundwood, residues, pulpmills, pulping capacity.

The Forest Service, U. S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

A Forest Service Resource Bulletin SE-38 January 1977

Stand-Age Profile of North Carolina's Timberland

by

Herbert A. Knight

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Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

Stand-Age Profile of North Carolina's Timberland

by

Herbert A. Knight, Resource Analyst

INTRODUCTION

Most timber stands in North Carolina are even aged and appeared after some act of nature or man. The most common acts which lead to the establishment of a new stand are timber harvesting, retirement of farmland, wildfire, wind and ice storms, or insect and disease outbreaks. Most frequently, the new stand is a product of nature's healing process. Less often, some landowner plants a stand of seedlings.

The Statewide age distribution of stands reflects historical land use patterns, economic cycles, and forestry practices. It is important as an indicator of prospective timber supplies and, together with information on forest conditions, as input for the formulation of forestry programs.

This report focuses on relationships between age distribution and past trends in land use and timber harvesting. Average diameter distributions are given for different ages of stands by broad forest types. Key findings include further evidence that (1) retired cropland has been a primary source of pine timber, (2) renewed agricultural activity will require more effective regeneration practices at time of harvest to sustain the existing acreage of pine forests on private, nonindustrial land, (3) a continuation of current trends will result in a forest increasingly dominated by hardwoods, and (4) wood-using industries in North Carolina will be highly dependent upon timber from other private owners for the foreseeable future.

BACKGROUND

For years, Forest Survey crews have estimated stand age at sample locations in the Southeast, but with limited success. High-grading, partial cuts, advance reproduction, and volume sampling procedures that permitted plots to straddle two or more conditions have all tended to weaken the stand-age estimates. Furthermore, a wide range in tree diameters at a given location has often misled crews into assigning a mixed-age classification. Finally, some acres have so few growing-stock trees, which are worth favoring in management, that stand age has little meaning.

In the fourth Statewide Forest Survey of North Carolina, started in November 1972 and completed January 1975, steps were taken which enhanced the validity of the stand-age classifications: (1) an even-aged management objective was assumed at each sample location; (2) each sample plot was confined to a single forest condition, as identified by point 1 of the 10-point sample cluster; (3) based on stocking of trees worth favoring in timber management, the presence or absence of a manageable stand was noted at each sample location; (4) greater emphasis was placed on making enough increment borings to accurately determine stand age.

Collectively, these efforts provided the first credible measure of the distribution of commercial forest acreage by stand age on a statewide basis in the Southeast. Data collected at about 5,000 sample locations, distributed across the entire State, support the information presented. The ability to profile the age distribution of timber stands across entire States adds another dimension to forest resource analyses.

STAND ORIGIN

Since softwood stands in the Southeast often seeded onto retired cropland (Boyce and McClure 1975),[1] a correlation was sought between reductions in cropland harvested and the age distribution of softwood stands (table 1). If a 2- to 5-year lag is assumed for retired cropland to revert to forest, there

Table 1.--Comparison of the reported reduction in cropland harvested to the age distribution of softwood stands, North Carolina, as of the fourth Forest Survey

Cropland harvested		Age distribution of softwood stands	
Period	Reported reduction[1]	Age[2]	Area
Years	Acres	Years	Acres
1945-1950	343,594	20-24	424,803
1950-1954	278,203	16-19	315,024
1954-1959	757,840	11-15	612,115
1959-1964	760,460	6-10	679,916
1964-1969	513,597	0-5	593,702
1945-1969	2,653,694	0-24	2,625,560

[1] North Carolina Summary Data, 1969 Census of Agriculture, Table 1.
[2] Stand-age classifications made between November 1972 and January 1975.

[1]Boyce, Stephen G., and Joe P. McClure. 1975. How to keep one-third of Georgia in pine. USDA For. Serv. Res. Pap. SE-144, 23 p. Southeast. For. Exp. Stn., Asheville, N. C.

seems to be a fairly strong correlation between cropland retirement and the age distribution of softwood stands in North Carolina. Since cropland retirement--a primary source of softwood stands--is no longer occurring at a rapid rate in North Carolina, future supplies of softwood timber may be significantly reduced. Furthermore, the latest Forest Survey revealed that roughly one-half of the pine acreage now being harvested is not remaining in pine type because of inadequate site preparation and regeneration practices. More effective regeneration practices at time of harvest will be required to sustain pine on existing forest acreage. Forestry interests in North Carolina should be aware that without the rotation of large acreages of retired cropland to pine, the present rate of artificial planting will not sustain the existing pine acreage controlled by private, nonindustrial owners. Continued dependence upon natural regeneration by these owners seems inevitable.

Most hardwood stands in North Carolina originate after timber harvesting. More than half the hardwood stands are at least 40 years old and were established on forested acreage cutover prior to 1930. Based on reported and estimated lumber production (Steer 1948),[2] timber harvesting in North Carolina during this century peaked between 1909 and 1916. Lumber production then declined somewhat, but continued at a fairly active pace until the Great Depression hit in 1930. After 7 years of depressed markets, lumber and other wood products began a modest recovery in 1937, that extended through the end of World War II in 1945. Between 1946 and 1957, timber demands were strong and many of North Carolina's second-growth stands were liquidated. Between 1958 and the early seventies, lumber production again slowed, and many small portable sawmills closed as pulpwood became a more common timber product. Finally, the current economic recession interrupted a most rapid expansion in the rate of timber harvesting and utilization, which had developed during the early seventies. The age distribution of hardwood stands generally reflects the historical cutting pattern described, and seems to correlate rather well with lumber production up until 1940, if a 5-year lag is assumed between harvest and the establishment of a new stand (table 2).

High-grading and other forest practices and disturbances have created conditions which have either prevented or delayed the natural regeneration of some $2\frac{1}{4}$-million acres classified as hardwood type in the latest survey. Typically, these acres are occupied by rough and rotten trees and other vegetation that inhibits development of a manageable stand. Stocking will improve on a small portion of these acres, but most will require site preparation or treatment before they can produce significant amounts of timber that is merchantable by today's standards. Since poor cutting practices in pine stands create much of this poorly stocked and low-producing hardwood acreage, public programs aimed at increasing timber supplies might be most effective if directed toward improved harvesting practices rather than toward improving poor conditions after they appear.

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[2]Steer, Henry B. 1948. Lumber production in the United States 1799-1946. USDA Misc. Publ. 669, 233 p., Washington, D. C.

Table 2.--Comparison of estimated lumber production to the age distribution of hardwood stands, North Carolina, as of the fourth Forest Survey

Estimated lumber production		Age distribution of hardwood stands	
Period	Volume[1]	Age[2]	Area
Years	M board feet	Years	Acres
1900-1909	13,769	60-69	1,378,000
1910-1919	18,547	50-59	1,740,000
1920-1929	14,799	40-49	1,772,000
1930-1939	11,111	30-39	1,394,000

[1] Based on "Lumber Production in the United States, 1799-1946" (Steer 1948).
[2] Stand-age classifications made between November 1972 and January 1975.

AVERAGE STAND STRUCTURE

The survey data permitted computation of average diameter distributions for 10-year age classes in softwood and hardwood stands in North Carolina (table 3). Acreage classified as having no manageable stand was eliminated from this computation to reduce the stocking variability. Acreage occupied by stands less than 10 years of age was also eliminated because stems less than 1.0 inch d.b.h. were not counted. Elimination of these young stands excluded most of the plantations.

The softwood types include areas where southern yellow pines, white pine, hemlock, cedar, spruce, and fir, singly or in combination, comprised 50 percent or more of the stocking. Although cypress is also a softwood species, it is included with hardwood in the conventional separations of forest type throughout this report. Oak-pine type is also included with the hardwood acreage because, by definition, hardwood species comprise 50 percent or more of the stocking in this type.

The averages shown in table 3 cover wide ranges of conditions in natural timber stands in North Carolina. Where a sufficient number of samples were available, similar tables could have been prepared for specific forest types, site classes, and recent stand histories.

Table 3.--Average number of all live trees 1.0 inch d.b.h. and larger per acre of commercial forest land, by diameter class and by broad forest type and stand-age class, North Carolina, 1974

Broad forest type and stand-age class	All classes	Diameter class (inches)									
		2	4	6	8	10	12	14	16	18	20+
	Number										
Softwood types:											
10-19	1,236	805	266	107	43	11	3	1	--	--	--
20-29	1,099	622	258	115	63	27	9	4	1	--	--
30-39	1,024	620	180	98	62	35	16	8	3	1	1
40-49	888	543	144	79	53	33	19	10	4	2	1
50-59	957	621	142	74	43	37	20	11	6	2	1
60-69	716	433	123	52	39	25	19	11	7	4	3
70-79	860	571	130	47	37	28	19	14	6	5	3
80-89	745	460	98	59	36	40	22	14	8	4	4
90+	761	447	146	51	44	35	12	7	7	3	9
Hardwood types:											
10-19	1,358	1,028	217	65	27	10	6	2	1	1	1
20-29	1,180	789	231	84	39	19	9	5	2	1	1
30-39	973	595	192	86	46	26	14	7	3	2	2
40-49	854	513	159	73	44	28	17	10	5	3	2
50-59	786	456	149	67	44	28	18	12	6	3	3
60-69	724	425	122	68	35	27	19	12	8	4	4
70-79	707	390	136	66	38	23	19	13	9	6	7
80-89	612	332	121	54	31	22	17	12	9	5	9
90+	612	316	144	47	29	22	16	12	9	6	11

Even from the broad profiles of average stand structure shown, however, significant differences between softwood and hardwood stands are apparent. For example, if one converts the stem counts of trees in the 6-inch class and larger to basal area, the average within softwood stands reaches about 90 square feet per acre in the 30- to 39-year age class and then flattens out. In contrast, the hardwood stands did not contain an average basal area of 90 square feet in similar-sized trees until age 50 to 59 (table 4). Unlike the softwood stands, the average basal area of the hardwood stands continued to increase through age 70 to 79. The rotations applied by timber managers are generally consistent with these implied growth patterns; rotations of 30 to 40 years are typical in pine, and 80-year rotations are not unusual for hardwoods. The shorter rotations possible with softwoods give them a distinct economic advantage over hardwoods.

Table 4.--Average basal area of all live trees 5.0 inches d.b.h. and larger per acre of commercial forest land, by broad forest type and stand-age class, North Carolina 1974

Stand-age class	Broad forest type	
	Softwood	Hardwood
Years	Square feet per acre	
10-19	45	40
20-29	72	60
30-39	89	78
40-49	89	86
50-59	91	91
60-69	88	95
70-79	91	106
80-89	105	101
90+	96	104

STAND-AGE PROFILES

In even-age management, allowable cut is based on area control. The objective is to achieve and maintain a stand-age distribution with approximately equal area in each age class within the applied rotation. Although the length of rotation varies because of differences in species composition, owner objectives, treatment, and site, some general stand-age profiles are useful in forest resource analyses. For example, separate age profiles for softwood and hardwood stands by ownership class provide considerable insight about prospective timber supplies and provide a measure of forestry progress, opportunities, and deficiencies.

The age profile for softwood types provides a measure of pine reforestation in the two youngest age classes--less than 10, and 10-19 (fig. 1). Pine plantations account for roughly half of the softwood acreage supporting stands less than 10 years of age, and 30 percent of the softwood stands 10 to 19 years old. These age classes reflect the common practice of pulp and paper companies to convert natural stands to plantations on all suitable acres owned or under their control. Without further land acquisition by these companies, their conversion schedules should soon exhaust their opportunities for increasing pine acreage within their holdings. The 10-19 age class includes the acreage of idle land planted with pine by other private owners under the Conservation Reserve Soil-Bank Program during the late fifties and early sixties. A decline in the rate of establishment of softwood stands on other private lands during the

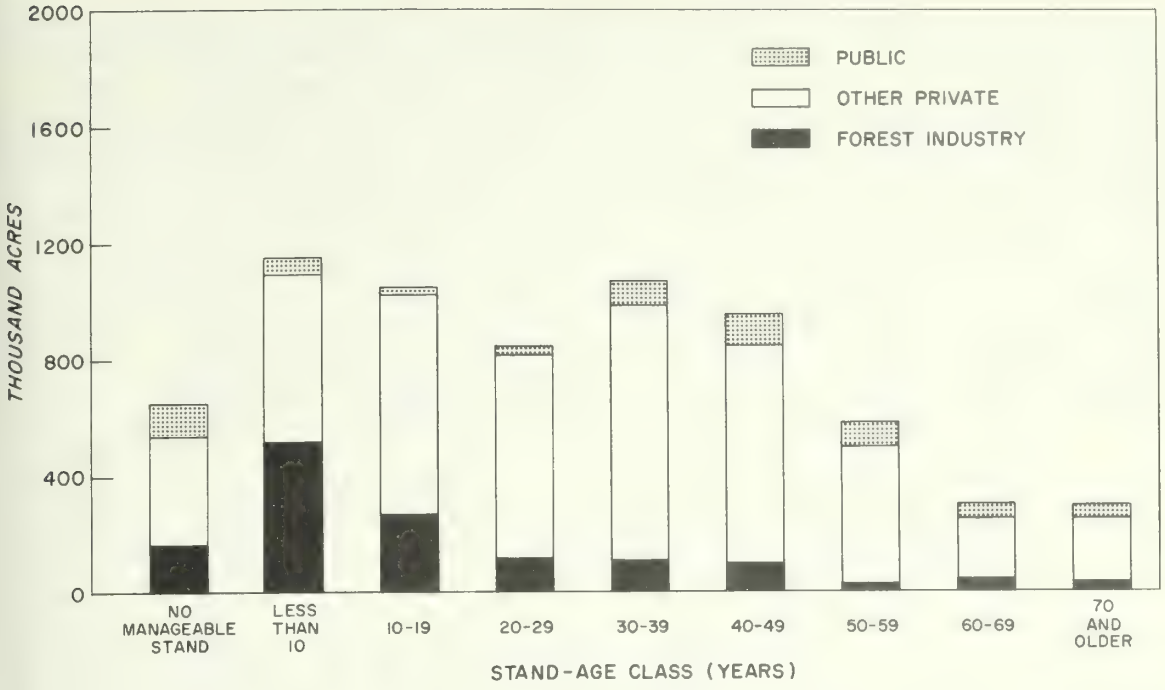

Figure 1.--Area of commercial forest land occupied by softwood forest types, by stand-age class by ownership class, North Carolina, 1974.

past decade reflects a sharp reduction in pine planting upon termination of the Soil-Bank Program and a slowdown in the natural reversion of idle fields to pine. The Survey was too early to provide any measure of the more recent Forestry Incentive Program.

There will be no substantial increase in acreage of softwood reaching merchantable age over the next 30 years. In fact, a sag in the profile at the 20- to 29-year age class identifies a prospective deficiency in the pine timber supply prior to the time when established plantations reach harvesting age. Thus, any increases in the pine harvest must come from increased yield per acre. Another conclusion is that wood-using industries in North Carolina will be highly dependent upon timber from the other private ownerships for the next several decades.

Tracts of softwood 40 years of age and older have been withheld from harvest at the normal rotation age for a variety of reasons: logging difficulties, public policy, owner objectives, and market deficiencies. Some resource analysts would view this acreage as a problem; others as a timber reserve that guards against the uncertainties of the future. Regardless of the view, substantial growth loss can occur when stands are carried beyond their maturity.

The age profile of acreage supporting hardwood types suggests that there will be an abundance of hardwood stands reaching maturity over the next several decades (fig. 2). Acreage deficiencies in young stands, together with the vast acreage inadequately stocked for management, pose problems over the longer run. Recent rates of successful hardwood establishment would have to be increased to correct the stocking deficiencies and age distribution of the

12.6 million acres now dominated by hardwoods; however, it is unlikely that existing hardwood markets in North Carolina could absorb the increase in hardwood harvesting implied in this age profile. If current trends continue, average hardwood rotations will be extended and a large reserve of mature and over-mature hardwood stands will accumulate. Substantial growth loss will continue at both ends of the age profile.

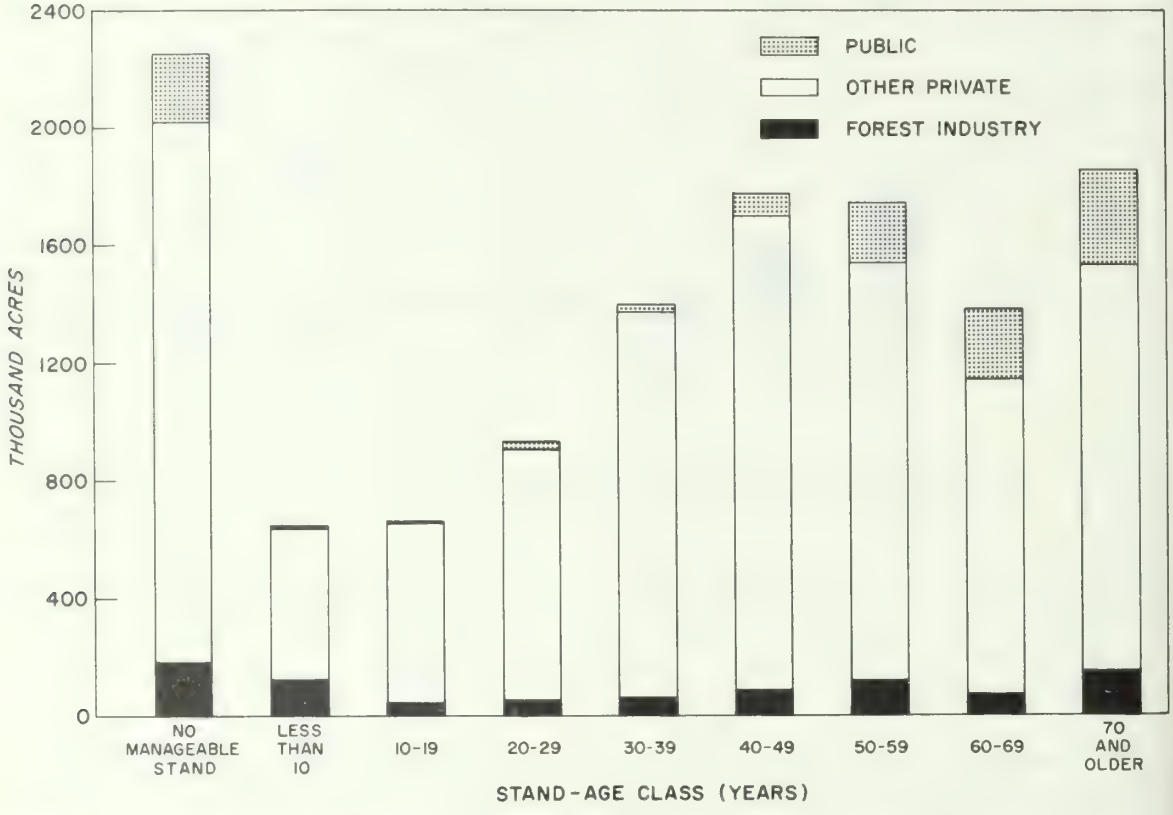

Figure 2.--Area of commercial forest land occupied with hardwood forest types, by stand-age class by ownership class, North Carolina, 1974.

STAND-AGE DISTRIBUTION BY SITE

The relation between site quality and stand age was examined (table 5). Here, the conventional Forest Survey classifications of site were grouped into three classes--good, medium, and poor--based on the forest area's capacity to grow industrial wood in fully stocked natural stands. Good sites are defined as capable of producing 85 or more cubic feet per acre annually; medium sites, between 50 and 85 cubic feet; and poor sites, less than 50 cubic feet.

No striking relationships were found between stand age and site on areas supporting a manageable stand. There was a slight tendency for old stands to be on poor sites. For example, 21 percent of the good sites supported stands 60 years of age and older; whereas, 26 percent of the poor sites supported such stands.

Table 5.--Area of commercial forest land, by broad site class and forest type and by stand-age class, North Carolina, 1974

Broad site class and forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Thousand acres										
Good sites:											
Softwood	1,222	46	156	170	176	251	202	124	65	23	9
Hardwood	2,441	272	145	90	166	311	393	456	234	186	188
Total	3,663	318	301	260	342	562	595	580	299	209	197
Medium sites:											
Softwood	4,002	197	864	690	516	618	516	296	148	77	80
Hardwood	8,132	1,231	465	471	614	931	1,171	1,099	923	514	713
Total	12,134	1,428	1,329	1,161	1,130	1,549	1,687	1,395	1,071	591	793
Poor sites:											
Softwood	1,681	412	131	190	155	199	239	160	87	54	54
Hardwood	2,067	752	41	101	156	152	208	185	221	71	180
Total	3,748	1,164	172	291	311	351	447	345	308	125	234
All sites:											
Softwood	6,905	655	1,151	1,050	847	1,068	957	580	300	154	143
Hardwood	12,640	2,255	651	662	936	1,394	1,772	1,740	1,378	771	1,081
Total	19,545	2,910	1,802	1,712	1,783	2,462	2,729	2,320	1,678	925	1,224

Several strong relationships between site and stocking were found (table 5). The better the site, the more likely that an area supports a manageable stand. Thus, while 90 percent of the good sites were adequately stocked with trees suitable for management, less than 70 percent of poor sites were so stocked. Better sites are probably attracting a better quality of timber management, and they restock better under custodial management.

Another finding is that hardwoods are more likely to dominate on good than on poor sites. Hardwood types accounted for 65 percent of the adequately stocked stands on good sites, and only 50 percent on poor sites.

The average volumes of growing stock per acre of commercial forest lend additional credibility to both the classification of site and stand age (table 6). The large spread in average volume between good sites and poor sites for a given age class certainly substantiates the importance of site selection for timber production investments. Furthermore, the low average volumes found on the poor sites imply that up to 20 percent of North Carolina's timberland is unlikely to attract investment dollars for timber production from knowledgeable land managers unless prospective yields can be increased through site improvement.

Although table 6 has many of the attributes of a conventional yield table, readers should fully understand that it does not reflect volume removed through thinnings and other intermediate cutting, or lost through mortality. The table, therefore, shows minimum yields as evidenced by actual stand performance

Table 6.--Average volume of growing stock per acre of commercial forest land, by broad site class and forest type and by stand-age class, North Carolina, 1974

Broad site class and forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Cubic feet										
Good sites:											
Softwood	1,996	252	162	1,191	1,995	2,561	2,757	3,105	3,387	2,718	2,798
Hardwood	1,839	532	641	674	1,314	1,790	2,114	2,233	2,404	2,729	2,935
All types	1,894	484	380	1,009	1,674	2,125	2,347	2,432	2,663	2,728	2,927
Medium sites:											
Softwood	1,070	139	99	637	1,168	1,543	1,918	1,989	1,967	2,473	2,676
Hardwood	1,309	525	255	631	935	1,255	1,474	1,742	1,906	2,097	2,358
All types	1,224	461	153	634	1,044	1,377	1,620	1,798	1,916	2,151	2,395
Poor sites:											
Softwood	643	230	87	314	576	827	1,045	1,256	1,017	1,244	1,191
Hardwood	760	347	259	343	799	723	989	1,375	1,466	1,395	1,400
All types	700	299	121	323	680	790	1,023	1,311	1,284	1,322	1,333
All sites:											
Softwood	1,127	205	107	673	1,225	1,627	1,884	2,002	1,994	2,090	2,114
Hardwood	1,335	467	343	597	980	1,338	1,579	1,840	1,940	2,207	2,345
All types	1,255	397	190	644	1,100	1,470	1,695	1,884	1,952	2,185	2,313

and as influenced by a variety of past forestry practices and natural disturbances. Although the volumes removed through intermediate cuttings or lost through mortality are undetermined, the average volumes by stand-age classes still suggest that mean annual increment culminates at an early age in the development of a stand. The average volumes by stand-age classes also indicate that growth culminates earlier on the better sites.

The volumes in table 6 include the net, solid-wood content of growing-stock trees 5.0 inches d.b.h. and larger from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem and primary forks. The volume in rough trees, rotten trees, and trees less than 5.0 inches d.b.h. is excluded.

STAND-AGE DISTRIBUTION BY REGION

The distribution of commercial forest acreage by stand-age class was examined by region (table 7). North Carolina contains three well-defined physiographic regions--Coastal Plain, Piedmont, and Mountain. Each of these regions has its own unique forestry problems and opportunities. One significant finding is that average stand age increased east to west. For example, less than 18 percent of the manageable stands were 60 years of age or older on the Coastal Plain, compared to almost 40 percent in the Mountain region. Differences in species composition help to explain this finding in that the proportion of commercial forest area dominated by hardwoods also increases east to

west. With inadequate hardwood markets and less than 15 percent of its manageable stands under 30 years of age, the Mountain region would require several decades to correct the skewed stand-age distribution under an even-aged objective.

More than 60 percent of the acreage without a manageable stand was on the Coastal Plain. Several factors contributed to the high proportion of poorly stocked acres in this region: (1) the highest rate of timber harvesting in the State; (2) extensive acreages of poorly stocked bays and pocosins; (3) a fairly large concentration of scrub oak.

Table 7.--Area of commercial forest land, by region and broad forest type and by stand-age class, North Carolina, 1974

Region and broad forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Thousand acres										
oastal Plain:											
Softwood	4,350	604	745	585	464	636	604	311	189	107	105
Hardwood	5,152	1,187	331	313	389	598	768	597	344	321	304
Total	9,502	1,791	1,076	898	853	1,234	1,372	908	533	428	409
iedmont:											
Softwood	2,096	31	358	414	299	346	273	222	99	38	16
Hardwood	3,932	557	274	284	410	422	500	526	389	233	337
Total	6,028	588	632	698	709	768	773	748	488	271	353
lountain:											
Softwood	459	20	48	51	84	86	80	47	12	9	22
Hardwood	3,556	511	46	65	137	374	504	617	645	217	440
Total	4,015	531	94	116	221	460	584	664	657	226	462
ll regions:											
Softwood	6,905	655	1,151	1,050	847	1,068	957	580	300	154	143
Hardwood	12,640	2,255	651	662	936	1,394	1,772	1,740	1,378	771	1,081
Total	19,545	2,910	1,802	1,712	1,783	2,462	2,729	2,320	1,678	925	1,224

When all forest types and conditions are grouped, average volume per acre also increases east to west (table 8). Regional differences in average stand age are one cause for this condition. Some of the highest average volumes of growing stock per acre, however, were in old wetland hardwood stands on the Coastal Plain, and in some old pine stands in the Piedmont.

STAND-AGE DISTRIBUTION BY OWNERSHIP

The final examination of the distribution of commercial forest acreage by stand age was by broad ownership class (table 9). All publicly owned holdings were grouped, while the private holdings were placed in two classes--forest industry and other. Other private acreage under long-term lease to forest industry was included with forest industry. Differences found in the stand-age

Table 8.--Average volume of growing stock per acre of commercial forest land, by region and broad forest type and by stand-age class, North Carolina, 1974

Region and broad forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Cubic feet										
Coastal Plain:											
Softwood	1,034	206	82	599	1,183	1,511	1,867	1,873	1,895	1,923	1,980
Hardwood	1,342	457	356	612	983	1,399	1,677	2,009	2,137	2,372	2,782
All types	1,203	372	169	604	1,090	1,455	1,760	1,965	2,051	2,262	2,585
Piedmont:											
Softwood	1,377	180	186	824	1,302	1,866	1,943	2,284	2,269	3,036	3,751
Hardwood	1,261	468	314	581	938	1,241	1,499	1,619	1,888	2,013	2,169
All types	1,301	451	242	724	1,094	1,520	1,660	1,819	1,963	2,146	2,234
Mountain:											
Softwood	1,472	180	157	832	1,371	2,158	1,852	1,921	2,306	1,326	1,957
Hardwood	1,431	523	358	529	1,147	1,261	1,347	1,724	1,744	1,924	1,863
All types	1,435	509	258	662	1,224	1,438	1,415	1,738	1,756	1,905	1,867
All regions:											
Softwood	1,127	205	107	673	1,225	1,627	1,884	2,002	1,974	2,090	2,114
Hardwood	1,335	467	343	597	980	1,338	1,579	1,840	1,940	2,207	2,345
All types	1,255	397	190	644	1,100	1,470	1,695	1,884	1,952	2,185	2,313

Table 9.--Area of commercial forest land, by broad ownership class and forest type and by stand-age class, North Carolina, 1974

Broad ownership class and forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Thousand acres										
Public:											
Softwood	602	114	54	28	30	85	114	81	48	25	23
Hardwood	1,143	234	13	3	31	22	76	203	236	76	249
Total	1,745	348	67	31	61	107	190	284	284	101	272
Forest industry:[1]											
Softwood	1,410	170	522	274	120	113	100	33	43	14	21
Hardwood	906	184	125	45	56	63	88	121	74	80	70
Total	2,316	354	647	319	176	176	188	154	117	94	91
Other private:											
Softwood	4,893	371	575	748	697	870	743	466	209	115	99
Hardwood	10,591	1,837	513	614	849	1,309	1,608	1,416	1,068	615	762
Total	15,484	2,208	1,088	1,362	1,546	2,179	2,351	1,882	1,277	730	861
All owners:											
Softwood	6,905	655	1,151	1,050	847	1,068	957	580	300	154	143
Hardwood	12,640	2,255	651	662	936	1,394	1,772	1,740	1,378	771	1,081
Total	19,545	2,910	1,802	1,712	1,783	2,462	2,729	2,320	1,678	925	1,224

[1]Includes acreage under long-term lease.

distributions among the three owner classes evidence differences in management and owner objectives. The largest differences were between public and forest-industry lands. For example, stands less than 30 years old occupied 58 percent of the industry acreage supporting manageable stands, but only 11 percent of the similar acreage under public ownership.

Another fact that stands out in table 9 is that softwood species dominate on the acreage owned and leased by forest industry, whereas hardwoods dominate on other lands. Naturally, forest industry manages its forests for profit and to meet its long-range wood requirements; therefore, it favors the production of southern yellow pine on short rotations. The required forestry practices are often difficult and costly in North Carolina, where maintaining pine runs counter to the natural succession towards hardwoods. Forest industry benefits from profit opportunities extending from stumpage through primary and secondary manufacturing; many of these advantages are not available to other forest owners. Society benefits from industrial forests primarily through the jobs, payrolls, and profits generated.

Hardwoods dominate the species composition on publicly owned forests for a number of reasons: (1) hardwoods already occupied much of this acreage when it was acquired; (2) with the longer rotations commonly used in the timber management of public forests, there are fewer opportunities for controlling species composition; and (3) society demands that public forests be managed to provide a wide range of goods and services, of which timber is only one product.

Hardwoods dominate the species composition on other private forests for somewhat different reasons: (1) the drier and more gentle terrain characteristic of pine sites attracts investments in agricultural activities, urban development, and other nontimber uses of the land, while forests are relegated to the swamps, bays, stream margins, and mountains where hardwoods are firmly entrenched; (2) custodial-type management prevails in this owner class, enabling widespread hardwood encroachment onto pine sites following harvesting; (3) short owner tenure tends to discourage long-term forestry investments.

A casual comparison of average volume per acre by owner class could lead to a conclusion that other private owners are outperforming both forest industry and public agencies (table 10). A primary reason for the relatively low average volumes on publicly owned acreage at given stand ages is the prevalence of poor sites. Almost 40 percent of the public sites were classified as poor, compared to less than 20 percent of the private sites. The influence of site on timber yields has already been confirmed in table 6. Higher averages for the other private than for industrial acreage are more difficult to explain. Sites averaged only slightly better on other private than on forest industry acreages. Forest industry has already liquidated most of its older pine stands on better sites and replaced them with young pine plantations. A sharp increase in the industry averages can be expected as these plantations develop. The low average volumes in the upper age classes for industry reflect a residual of old, low-volume pond pine stands in the Coastal Plain. The higher average volumes for old softwood stands within the other private class have probably accumulated on acreage where owners have been unwilling to sell their timber for a variety of reasons. The higher averages in young stands of other private owners reflect a significant acreage of densely stocked pine stands

Table 10.--Average volume of growing stock per acre of commercial forest land, by broad ownership class and forest type and by stand-age class, North Carolina, 1974

Broad ownership class and forest type	All classes	Stand-age class									
		No manageable stand	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
	Cubic feet										
Public:											
Softwood	948	248	53	770	958	1,266	1,618	1,390	1,138	1,003	1,508
Hardwood	1,364	430	443	([1])	463	1,525	1,368	1,770	1,636	1,902	1,862
All types	1,185	350	150	694	727	1,318	1,524	1,650	1,497	1,645	1,818
Forest industry:											
Softwood	588	108	54	542	893	1,610	1,614	1,738	1,589	1,850	1,719
Hardwood	1,337	441	207	659	1,259	1,478	1,663	2,083	1,933	2,173	2,968
All types	890	284	83	564	1,013	1,559	1,636	2,003	1,815	2,121	2,703
Other private:											
Softwood	1,342	239	180	725	1,308	1,669	1,968	2,121	2,309	2,331	2,361
Hardwood	1,332	474	382	592	973	1,324	1,582	1,823	1,990	2,244	2,373
All types	1,335	428	278	665	1,128	1,469	1,715	1,905	2,055	2,260	2,371
All owners:											
Softwood	1,127	205	107	673	1,225	1,627	1,884	2,002	1,994	2,090	2,114
Hardwood	1,335	467	343	597	980	1,338	1,579	1,840	1,940	2,207	2,345
All types	1,255	397	190	644	1,100	1,470	1,695	1,884	1,952	2,185	2,313

[1] Sample was too small to provide a valid estimate.

which have developed on abandoned fields. Furthermore, the volume averages for other private are often boosted by a scattering of residual trees from the previous stand. More of the young stands on industry holdings are developing following clearcutting and site preparation.

In conclusion, this information is intended to supplement the fourth State-wide evaluation of North Carolina's timber resource (Knight and McClure 1975),[3] and provides additional input for more in-depth forest resource analysis. It is apparent that improved stand-age classifications can enhance the usefulness of Forest Survey data. They can serve to (1) better quantify current and prospective timber supplies; (2) help identify opportunities for increasing future supplies; (3) measure the forest resource's response over time to practices and actions which involve extensive acreages; and (4) provide an often missing link for expanding other research results to the State and Regional levels. Based upon these results, efforts to strengthen the stand-age classifications in North Carolina have been extended into Virginia. An accumulation of stand-age information will open up additional opportunities for forest resource analyses in the Southeast.

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[3] Knight, Herbert A., and Joe P. McClure. 1975. North Carolina's timber, 1974. USDA For. Serv. Resour. Bull. SE-33, 52 p. Southeast. For. Exp. Stn., Asheville, N.C.

*U.S. GOVERNMENT PRINTING OFFICE 740-134/4920

Knight, Herbert A.
1976. Stand-age profile of North Carolina's timberland. USDA For. Serv. Resour. Bull. SE-38, 15 p. Southeast. For. Exp. Stn., Asheville, N. C.

North Carolina's forests are a collection of small, even-aged stands whose age distribution reflects historical land use patterns, economic cycles, and forestry practices. An examination of the age distribution and condition of these stands supplements the fourth Statewide evaluation of North Carolina's timber resource completed in 1975.

Keywords: Commercial forest, stand age, stand origin, forest type, site class, physiographic region, ownership, manageable stand.

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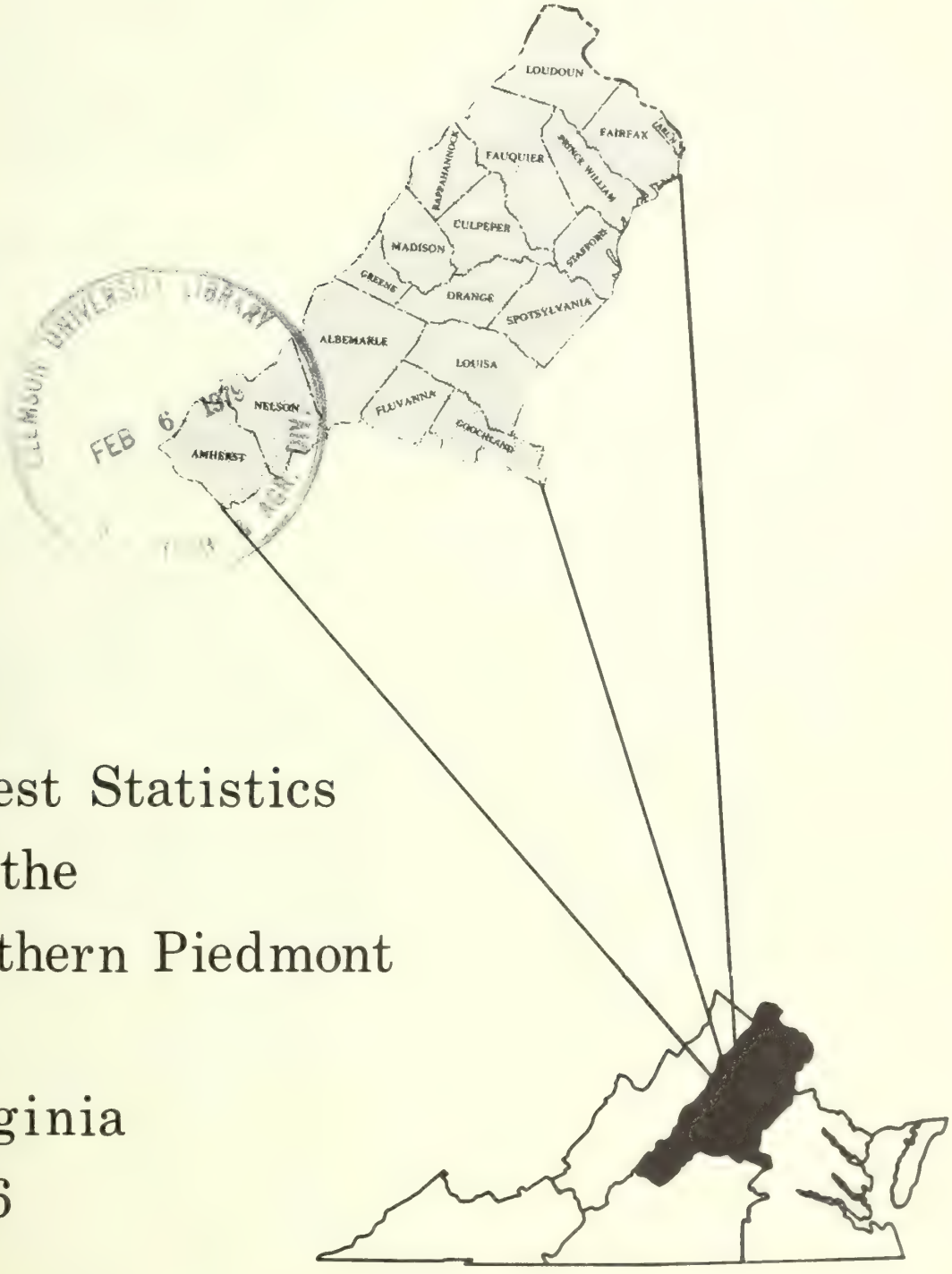

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Forest Statistics for the Northern Piedmont of Virginia 1976

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Northern Piedmont of Virginia. The inventory was started in March 1976 and completed in August 1976. Three previous inventories, completed in 1940, 1957, and 1965, provide statistics for measuring changes and trends over the past 36 years. In this report, the primary emphasis is on the changes and trends since 1965. Previously reported figures have been adjusted to provide the best estimate of real change.

Forest Resources Research, authorized by the McSweeney-McNary Forest Research Act of 1928, as amended, and by the Forest and Rangeland Renewable Resources Planning Act of 1974, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Forest Resources Research is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 18-county area covered by this report is one of five survey units in Virginia. Similar reports, USDA Forest Service Resource Bulletins SE-34 and 35, have been issued for the Coastal Plain and Southern Piedmont of Virginia. Comparable reports for the other two units will be issued as the Statewide inventory progresses. When completed, this inventory will provide updated statistics on the timber resource for all of Virginia.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Virginia Division of Forestry. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Northern Piedmont of Virginia
1976

by
Raymond M. Sheffield, Assistant Mensurationist

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HIGHLIGHTS

Since 1965 in the Northern Piedmont of Virginia--

--area of commercial forest land has increased by 93,000 acres, or nearly 4 percent. The increase occurred in almost all areas except five counties near Washington, D. C. The addition of nearly 172,000 acres to commercial forest has more than offset the diversion of almost 79,000 acres of forest land to other land uses. About 72 percent of the diversion was to urban development and agricultural uses; the remainder of the loss was attributed to land clearing for new lakes and to the reclassification of 11,000 acres as productive-reserved forest. Commercial forests now occupy 2.6 million acres, or 58 percent of the total land area in this 18-county area.

--area of commercial forest land held by miscellaneous private owners has increased by 242,000 acres, or 24 percent. Farmer-owned woodlands declined by 180,000 acres. Forest-industry holdings increased by 8 percent; however, forest industries still control only 8 percent of all commercial forest land. Public ownership of commercial forests increased by 18 percent, and now totals almost 162,000 acres. Private nonindustrial landowners control 86 percent of all commercial forest land.

--about 31 percent of the area remaining in commercial forests has been treated or significantly disturbed. Over 288,000 acres were harvested and nearly 293,000 acres have undergone intermediate cutting. More than 24 percent of the harvested stands were subsequently artificially regenerated. Nearly 58 percent of all artificial regeneration occurred on forest-industry lands; most of the remainder occurred on private nonindustrial lands. Grazing and other significant disturbances occurred on 112,000 acres. An additional 85,000 acres were disturbed by insects, disease, weather, and other damaging agents.

--area occupied by sawtimber stands has increased by 33 percent. Poletimber stands have decreased in area by 3 percent, while sapling-seedling stands have decreased by 19 percent. Forest land classified as nonstocked increased by 9,000 acres, or by 86 percent. The average age of adequately stocked stands is 26 years in the softwood forest types and 49 years in the hardwood types. Stands 40 years and older comprise 22 percent of the total acreage in softwood types and 69 percent of the total acreage in hardwood types.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 55 to 69 square feet per acre of commercial forest land. The number of saplings per acre increased from 535 to 579. Hardwoods accounted for all of this increase in saplings. Despite the increase in stocking, nearly 465,000 acres were classified as either nonstocked or poorly stocked with growing-stock trees.

--volume of softwood growing stock has increased from under 0.6 to over 0.7 billion cubic feet, or by 33 percent. Softwood growing-stock volume increased only 2 percent between 1957 and 1965. The recent increase in softwood volume occurred across all diameter classes and for all major species. Loblolly pine, white pine, and Virginia pine made the largest gains. Softwood sawtimber volume, which declined 3 percent between 1957 and 1965, has increased by 50 percent and now totals 1.6 billion board feet.

--volume of hardwood growing stock has increased from 2.0 to 2.6 billion cubic feet, or by 30 percent. Hardwood growing-stock volume increased 9 percent between 1957 and 1965. Again, the increase occurred across all diameter classes and for most major species. Yellow-poplar and the oaks accounted for 73 percent of the gain. The current inventory of hardwood growing stock includes 7.3 billion board feet of sawtimber, up by 36 percent.

In 1975--

--net growth of growing stock totaled 141 million cubic feet and included 471 million board feet of sawtimber. Net growth averaged 55 cubic feet per acre of commercial forest; hardwoods accounted for nearly three-fourths of this growth. Ingrowth accounted for 29 percent of the net softwood growth, but only 12 percent of the hardwood. By ownership, 7 percent of the growth occurred on public lands; 8 percent on lands owned by forest industry; 37 percent on farmer-owned lands; and the remaining 48 percent on miscellaneous private lands. Net growth exceeded removals by 52 percent for softwoods and by 80 percent for hardwoods.

--removals of growing stock totaled 82 million cubic feet and included 247 million board feet of sawtimber. Almost 23 percent of the growing-stock removals were not used for products. Nearly one-fourth of this unused volume was left during logging and stand improvement operations. Growing-stock removals, by ownership class, differed from the distribution of net growth. Almost 12 percent of the removals came from publicly owned forests; another 12 percent from forest-industry lands; only 23 percent from farmer-owned lands; and 53 percent from miscellaneous private woodlands.

--mortality of growing stock totaled 20 million cubic feet and included 52 million board feet of sawtimber. Some 43 percent of the total mortality was softwood; more than half of the softwood mortality volume was the result of losses to pine bark beetles. Other identifiable causes of death included weather, suppression, disease, and fire. Altogether, mortality reduced gross growth of growing stock by 13 percent.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 14,228 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 1,188 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 667 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees in the Northern Piedmont of Virginia, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at 15 active cutting operations. These data will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 701 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	1.16
Per billion cubic feet of growing stock	4.77
Per billion cubic feet of net annual growth	1.01
Per billion cubic feet of annual removals	2.56

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
ALBEMARLE	2.04	7.94	8.59	25.14
AMHERST	1.83	7.96	8.38	35.88
ARLINGTON	0.00	0.00	0.00	0.00
CULPEPER	3.88	11.84	10.67	42.61
FAIRFAX	5.58	12.50	12.87	41.79
FAUQUIER	3.67	10.30	12.09	39.64
FLUVANNA	2.49	12.61	13.06	38.88
GOOCHLAND	3.01	9.90	10.15	37.87
GREENE	4.21	16.20	15.78	53.76
LOUDOUN	3.47	11.13	10.83	50.96
LOUISA	1.43	9.73	10.43	20.16
MADISON	3.11	11.92	12.19	85.17
NELSON	1.51	7.21	7.00	34.53
ORANGE	3.57	14.33	13.19	29.17
PRINCE WILLIAM	4.82	12.84	10.67	28.97
RAPPAHANNOCK	3.59	14.59	18.30	100.04
SPOTSYLVANIA	1.89	10.20	11.23	28.13
STAFFORD	3.05	10.51	8.86	39.84
UNIT TOTAL	0.72	2.62	2.69	8.93

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.5	61.0	68.2	60.0
8	68.5	68.1	76.0	68.4
10	73.4	73.1	81.4	73.4
12	76.5	76.7	85.2	76.4
14	78.6	79.4	88.2	78.4
16	80.0	81.6	90.4	79.8
18	81.0	83.3	92.3	80.8
20	81.8	84.8	93.8	81.5
22	82.3	86.0	95.1	82.1
24+	83.3	87.0	97.1	83.1
AVERAGE	73.9	69.9	81.1	74.7

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1976*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
ALBEMARLE	480,640	320,656	291,386	--	29,270	159,984
AMHERST	300,763	234,862	232,994	--	1,868	65,901
ARLINGTON	16,640	--	--	--	--	16,640
CULPEPER	248,960	107,768	107,768	--	--	141,192
FAIRFAX	268,593	123,051	105,435	--	17,616	145,542
FAUQUIER	422,400	191,790	191,790	--	--	230,610
FLUVANNA	184,141	134,086	134,086	--	--	50,055
GOOCHLAND	188,800	136,607	136,607	--	--	52,193
GREENE	97,920	66,770	51,983	--	14,787	31,150
LOUDOUN	330,340	111,726	111,614	--	112	218,614
LOUISA	324,743	234,104	234,104	--	--	90,639
MADISON	209,280	129,859	97,685	--	32,174	79,421
NELSON	301,440	239,432	238,094	--	1,338	62,008
ORANGE	226,959	132,334	131,845	--	489	94,625
PRINCE WILLIAM	222,122	115,122	104,606	--	10,516	107,000
RAPPAHANNOCK	170,880	106,495	74,756	--	31,739	64,385
SPOTSYLVANIA	263,472	187,532	184,139	--	3,393	75,940
STAFFORD	173,829	125,121	123,166	--	1,955	48,708
TOTAL	4,431,922	2,697,315	2,552,058	--	145,257	1,734,607

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 33,454 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1976*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
ALBEMARLE	291,386	--	--	763	3,052	22,472	126,787	23,052	115,260
AMHERST	232,994	50,798	--	54	806	20,943	59,680	3,730	96,983
ARLINGTON	--	--	--	--	--	--	--	--	--
CULPEPER	107,768	--	--	--	--	7,539	61,430	6,467	32,332
FAIRFAX	105,435	--	8,975	2,764	748	--	3,873	30,983	58,092
FAUQUIER	191,790	--	3,277	4,078	749	3,706	88,075	26,806	65,099
FLUVANNA	134,086	--	--	770	85	19,432	54,425	14,844	44,530
GOOCHLAND	136,607	--	--	22	138	14,214	26,738	11,460	84,035
GREENE	51,983	--	--	1,000	--	1,332	23,171	3,310	23,170
LOUDOUN	111,614	--	3,849	4	1,054	--	57,456	8,209	41,042
LOUISA	234,104	--	--	33	649	23,063	91,460	32,011	86,888
MADISON	97,685	--	--	7,094	--	897	51,254	8,543	29,897
NELSON	238,094	12,208	--	796	--	37,337	87,886	23,969	75,898
ORANGE	131,845	--	--	--	332	10,677	56,864	--	63,972
PRINCE WILLIAM	104,606	--	25,008	471	1,162	--	30,510	16,949	30,506
RAPPAHANNOCK	74,756	--	--	--	--	--	47,572	--	27,184
SPOTSYLVANIA	184,139	--	--	50	1,968	34,646	38,809	15,524	93,142
STAFFORD	123,166	--	27,164	128	1,646	2,470	22,939	13,109	55,710
TOTAL	2,552,058	63,006	68,273	18,027	12,389	198,728	928,929	238,966	1,023,740

TABLE 3.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1976*

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
ALBEMARLE	291,386	3,842	--	--	68,576	23,052	195,916	--	--	--
AMHERST	232,994	--	--	--	43,352	32,628	157,014	--	--	--
ARLINGTON	--	--	--	--	--	--	--	--	--	--
CULPEPER	107,768	--	--	--	22,632	16,166	62,504	--	6,466	--
FAIRFAX	105,435	--	--	--	15,492	3,873	82,198	--	3,872	--
FAUQUIER	191,790	--	--	--	38,168	15,317	134,476	--	3,829	--
FLUVANNA	134,086	--	--	--	45,740	24,737	58,661	--	4,948	--
GOOCHLAND	136,607	--	--	--	41,647	19,099	72,041	--	3,820	--
GREENE	51,983	--	--	--	14,573	3,310	34,100	--	--	--
LOUDOUN	111,614	--	--	--	12,313	5,162	90,035	--	4,104	--
LOUISA	234,104	--	--	--	60,553	16,282	152,696	--	4,573	--
MADISON	97,685	--	--	--	12,813	8,542	72,059	--	4,271	--
NELSON	238,094	--	--	--	32,494	23,186	174,425	--	7,989	--
ORANGE	131,845	--	--	--	25,210	24,888	78,193	--	3,554	--
PRINCE WILLIAM	104,606	--	--	--	24,364	3,390	73,463	--	3,389	--
RAPPAHANNOCK	74,756	3,398	--	--	3,398	3,398	64,562	--	--	--
SPOTSYLVANIA	184,139	--	--	--	60,463	35,829	80,085	3,881	3,881	--
STAFFORD	123,166	--	--	--	26,690	12,538	83,938	--	--	--
TOTAL	2,552,058	7,240	--	--	548,478	271,397	1,666,366	3,881	54,696	--

TABLE 4.--*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1976*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
ALBEMARLE	291,386	134,062	81,064	68,576	7,684
AMHERST	232,994	76,985	116,201	39,754	54
ARLINGTON	--	--	--	--	--
CULPEPER	107,768	42,033	38,798	26,937	--
FAIRFAX	105,435	69,351	20,593	15,491	--
FAUQUIER	191,790	95,429	61,146	30,637	4,578
FLUVANNA	134,086	25,946	57,201	50,939	--
GOOCHLAND	136,607	30,027	64,937	41,643	--
GREENE	51,983	27,480	11,262	13,241	--
LOUDOUN	111,614	69,514	25,683	16,417	--
LOUISA	234,104	47,516	126,587	60,001	--
MADISON	97,685	54,076	26,524	17,085	--
NELSON	238,094	135,142	67,521	35,431	--
ORANGE	131,845	39,094	31,991	57,206	3,554
PRINCE WILLIAM	104,606	53,654	31,141	19,811	--
RAPPAHANNOCK	74,756	47,572	10,194	16,990	--
SPOTSYLVANIA	184,139	34,927	94,493	50,838	3,881
STAFFORD	123,166	56,421	46,115	20,630	--
TOTAL	2,552,058	1,039,229	911,451	581,627	19,751

TABLE 5.--*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1976*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
ALBEMARLE	291,386	--	--	19,210	195,336	76,840
AMHERST	232,994	--	3,730	18,650	178,087	32,527
ARLINGTON	--	--	--	--	--	--
CULPEPER	107,768	--	--	16,167	88,368	3;233
FAIRFAX	105,435	--	--	15,492	78,325	11,618
FAUQUIER	191,790	--	--	18,843	161,459	11,488
FLUVANNA	134,086	--	--	25,344	84,004	24,738
GOOCHLAND	136,607	--	--	11,460	110,135	15,012
GREENE	51,983	--	4,310	6,620	31,123	9,930
LOUDOUN	111,614	--	--	8,208	102,348	1,058
LOUISA	234,104	--	2,562	27,438	178,676	25,428
MADISON	97,685	--	1,773	8,542	78,828	8,542
NELSON	238,094	--	--	34,398	174,077	29,619
ORANGE	131,845	--	--	--	110,521	21,324
PRINCE WILLIAM	104,606	--	--	--	91,048	13,558
RAPPAHANNOCK	74,756	--	--	3,398	54,368	16,990
SPOTSYLVANIA	184,139	--	--	31,498	132,337	20,304
STAFFORD	123,166	--	--	43,312	79,854	--
TOTAL	2,552,058	--	12,375	288,580	1,928,894	322,209

TABLE 6.--*AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1976*

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
				ACRES		
ALBEMARLE	291,386	7,684	76,454	141,553	58,011	7,684
AMHERST	232,994	--	32,292	149,267	51,381	54
ARLINGTON	--	--	--	--	--	--
CULPEPER	107,768	--	16,166	72,204	19,398	--
FAIRFAX	105,435	3,873	42,242	42,601	16,719	--
FAUQUIER	191,790	3,829	19,023	122,239	42,121	4,578
FLUVANNA	134,086	--	42,963	86,176	4,947	--
GOOCHLAND	136,607	--	41,646	79,949	15,012	--
GREENE	51,983	3,310	4,642	34,101	9,930	--
LOUDOUN	111,614	--	4,104	74,933	32,577	--
LOUISA	234,104	7,136	85,981	106,413	34,574	--
MADISON	97,685	4,271	22,254	49,805	21,355	--
NELSON	238,094	--	55,145	127,809	55,140	--
ORANGE	131,845	--	32,323	74,639	21,329	3,554
PRINCE WILLIAM	104,606	--	36,177	47,456	20,973	--
RAPPAHANNOCK	74,756	--	20,388	33,980	20,388	--
SPOTSYLVANIA	184,139	7,762	90,097	66,426	15,973	3,881
STAFFORD	123,166	10,068	35,477	72,569	5,052	--
TOTAL	2,552,058	47,933	657,374	1,382,120	444,880	19,751

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.--*VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*[1]				
ALBEMARLE	1,093,304	153,694	22,508	277,744	639,358	384,821	68,114	6,689	81,674	228,344
AMHERST	664,420	66,250	57,542	201,538	339,090	263,371	44,130	15,284	69,527	134,430
ARLINGTON	--	--	--	--	--	--	--	--	--	--
CULPEPER	334,711	90,891	1,039	45,847	196,934	132,957	39,422	824	23,351	69,360
FAIRFAX	696,901	75,976	--	167,373	453,552	203,771	28,445	775	44,769	129,782
FAUQUIER	642,904	156,946	2,325	132,334	351,299	231,242	53,383	1,950	44,800	131,109
FLUVANNA	270,768	109,877	2,641	49,309	108,941	129,456	53,109	1,438	21,206	53,703
GOOCHLAND	328,943	47,390	--	141,078	140,475	153,387	39,442	1,119	47,218	65,608
GREENE	213,262	21,500	--	74,887	116,875	74,209	15,601	391	22,027	36,190
LOUDOUN	473,332	4,586	1,008	96,543	371,195	145,214	3,815	653	24,533	116,213
LOUISA	573,710	184,164	2,793	119,202	267,551	273,684	81,475	1,776	54,562	135,871
MADISON	414,146	62,892	14,536	103,024	233,694	137,812	25,505	3,159	30,357	78,791
NELSON	1,002,441	79,890	44,647	320,150	557,754	343,102	44,445	12,297	101,027	185,333
ORANGE	351,530	26,050	7,507	125,883	192,090	124,701	17,438	4,062	34,423	68,778
PRINCE WILLIAM	489,117	74,861	2,227	74,296	337,733	164,653	29,278	2,140	24,011	109,224
RAPPAHANNOCK	311,130	14,454	5,682	132,725	158,269	92,960	6,254	1,299	35,250	50,157
SPOTSYLVANIA	410,305	120,217	2,654	82,684	204,750	219,621	77,646	1,069	48,831	92,075
STAFFORD	572,043	94,493	2,056	136,685	338,809	209,619	46,916	786	53,767	108,150
TOTAL	8,842,967	1,384,131	169,165	2,281,302	5,008,369	3,284,580	674,418	55,711	761,333	1,793,118

[1] FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8. --*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALBEMARLE	57,344	8,671	1,520	17,828	29,325	16,057	3,024	499	3,823	8,711
AMHERST	41,413	5,434	3,946	15,517	16,516	11,964	2,216	887	3,429	5,432
ARLINGTON	--	--	--	--	--	--	--	--	--	--
CULPEPER	18,241	4,812	78	5,123	8,228	5,489	1,630	19	1,230	2,610
FAIRFAX	26,338	4,554	--	6,928	14,856	7,621	1,370	21	1,909	4,321
FAUQUIER	32,100	5,821	36	9,148	17,095	9,125	2,119	153	1,870	4,983
FLUVANNA	14,375	5,596	164	2,747	5,868	7,019	3,361	99	1,280	2,279
GOOCHLAND	21,921	4,005	73	6,540	11,303	7,785	2,849	30	1,862	3,044
GREENE	10,827	2,446	250	3,898	4,233	3,388	772	9	1,207	1,400
LOUDOUN	18,907	461	29	3,980	14,437	5,287	205	43	971	4,068
LOUISA	42,376	11,701	81	10,512	20,082	12,804	4,108	285	2,684	5,727
MADISON	21,121	2,649	836	6,632	11,004	5,361	1,032	200	1,433	2,696
NELSON	53,502	5,161	1,952	23,291	23,098	13,346	2,152	441	4,825	5,928
ORANGE	15,393	1,248	188	5,461	8,496	5,088	744	252	1,577	2,515
PRINCE WILLIAM	21,898	4,013	143	3,118	14,624	5,978	1,224	53	962	3,739
RAPPAHANNOCK	17,516	706	278	9,914	6,618	4,435	238	68	2,183	1,946
SPOTSYLVANIA	29,973	10,839	300	7,299	11,535	12,165	5,669	85	2,102	4,309
STAFFORD	27,961	5,465	57	7,376	15,063	8,307	1,945	14	2,876	3,472
TOTAL	471,206	83,582	9,931	145,312	232,381	141,219	34,658	3,158	36,223	67,180

TABLE 9. --*ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1975*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALBEMARLE	29,438	3,322	--	10,912	15,204	7,234	886	--	2,556	3,792
AMHERST	6,694	636	922	1,346	3,790	2,946	661	145	485	1,655
ARLINGTON	--	--	--	--	--	--	--	--	--	--
CULPEPER	10,300	910	--	2,829	6,561	2,662	157	--	610	1,895
FAIRFAX	21,814	4,736	--	5,654	11,424	4,993	1,139	--	1,116	2,738
FAUQUIER	8,777	1,230	--	4,037	3,510	3,745	1,369	--	1,030	1,346
FLUVANNA	11,832	7,174	--	2,199	2,459	5,771	2,771	149	423	2,428
GOOCHLAND	11,686	2,075	--	3,869	5,742	4,465	1,035	--	912	2,518
GREENE	1,586	--	--	--	1,586	515	--	--	175	340
LOUDOUN	14,791	2,696	--	2,134	9,961	3,341	539	--	401	2,401
LOUISA	28,492	9,739	522	6,105	12,126	11,549	3,601	356	2,355	5,237
MADISON	3,478	--	--	1,196	2,282	881	--	--	203	678
NELSON	14,159	--	2,002	6,467	5,690	4,149	596	315	1,420	1,818
ORANGE	20,943	5,064	--	2,898	12,981	7,329	2,721	--	552	4,056
PRINCE WILLIAM	16,636	--	--	3,032	13,604	5,443	593	--	651	4,199
RAPPAHANNOCK	464	--	--	464	--	119	--	--	119	--
SPOTSYLVANIA	23,543	11,091	--	3,590	8,862	11,102	6,513	108	1,039	3,442
STAFFORD	22,241	4,576	--	9,626	8,039	6,005	1,236	--	2,348	2,421
TOTAL	246,874	53,249	3,446	66,358	123,821	82,249	23,817	1,073	16,395	40,964

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1976*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
	ACRES					
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	7,240	--	--	--	3,398	3,842
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	84,198	--	332	34,927	19,753	29,186
SHORTLEAF PINE	45,845	--	--	3,554	21,919	20,372
VIRGINIA PINE	392,055	--	22,355	51,852	150,531	167,317
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	26,380	--	403	--	15,073	10,904
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	--	--	--	--	--	--
TABLE-MOUNTAIN PINE	--	--	--	--	--	--
TOTAL	555,718	--	23,090	90,333	210,674	231,621
HARDWOOD TYPES:						
OAK-PINE	271,397	7,256	7,849	35,007	114,816	106,469
OAK-HICKORY	1,576,028	44,864	65,977	69,654	559,162	836,371
CHESTNUT OAK	90,338	10,886	1,773	3,734	16,778	57,167
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	3,881	--	--	--	--	3,881
ELM-ASH-COTTONWOOD	54,696	--	--	--	27,499	27,197
MAPLE-BEECH-BIRCH	--	--	--	--	--	--
TOTAL	1,996,340	63,006	75,599	108,395	718,255	1,031,085
ALL TYPES	2,552,058	63,006	98,689	198,728	928,929	1,262,706

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1976*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
NATIONAL FOREST	63,006	--	7,256	52,121	3,629	--
OTHER PUBLIC	98,689	6,791	32,443	36,259	22,393	803
FOREST INDUSTRY	198,728	2,563	98,362	69,605	28,198	--
FARMER	928,929	11,160	238,016	523,154	152,757	3,842
MISC. PRIVATE	1,262,706	27,419	281,297	700,981	237,903	15,106
ALL OWNERSHIPS	2,552,058	47,933	657,374	1,382,120	444,880	19,751

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1976*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	1,728,346	287,606	28,697	415,215	996,828
UPPER-STEM PORTION	349,461	54,782	5,466	85,044	204,169
TOTAL	2,077,807	342,388	34,163	500,259	1,200,997
POLETIMBER TREES	1,206,773	332,030	21,548	261,074	592,121
ALL GROWING-STOCK TREES	3,284,580	674,418	55,711	761,333	1,793,118
ROUGH TREES:					
SAWTIMBER-SIZE TREES	155,705	6,001	1,106	38,660	109,938
POLETIMBER-SIZE TREES	225,810	17,777	1,426	64,834	141,773
TOTAL	381,515	23,778	2,532	103,494	251,711
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	43,251	231	316	13,989	28,715
POLETIMBER-SIZE TREES	7,206	--	--	2,735	4,471
TOTAL	50,457	231	316	16,724	33,186
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	3,259	1,195	31	289	1,744
POLETIMBER-SIZE TREES	2,732	1,194	37	597	904
TOTAL	5,991	2,389	68	886	2,648
TOTAL, ALL TIMBER	3,722,543	700,816	58,627	882,437	2,080,663

TABLE 13. --*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	14,914	5,042	5,251	2,797	1,322	408	64	10	20	--	--
LOBLOLLY PINE	8,117	5,073	2,141	474	171	115	44	64	30	5	--
POND PINE	12	--	--	--	--	--	12	--	--	--	--
VIRGINIA PINE	71,835	33,932	22,240	10,020	4,223	1,120	238	55	7	--	--
PITCH PINE	572	131	192	112	35	66	21	15	--	--	--
TABLE-MOUNTAIN PINE	16	--	--	--	16	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	2,019	735	344	335	148	214	122	46	26	49	--
EASTERN HEMLOCK	965	255	498	--	34	58	31	49	26	14	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	5,239	3,764	1,022	373	45	27	--	8	--	--	--
TOTAL SOFTWOODS	103,689	48,932	31,688	14,111	5,994	2,008	532	247	109	68	--
HARDWOOD:											
SELECT WHITE OAKS	39,898	14,701	8,847	5,587	3,996	2,731	2,012	1,011	571	421	21
SELECT RED OAKS	10,141	2,848	1,794	1,502	1,449	1,115	540	344	231	280	38
CHESTNUT OAK	20,750	5,106	4,778	3,959	2,561	1,633	1,199	813	386	290	25
OTHER WHITE OAKS	2,066	693	633	268	195	177	40	--	19	31	10
OTHER RED OAKS	31,362	10,064	8,057	4,687	3,427	2,498	1,236	647	357	369	20
HICKORY	20,857	8,159	4,469	3,609	2,021	1,312	807	243	95	139	3
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	46	--	--	21	18	--	--	7	--	--	--
SOFT MAPLE	14,462	6,560	3,213	2,443	1,083	484	362	131	59	123	4
BEECH	3,851	1,841	695	551	285	216	89	65	56	51	2
SWEETGUM	7,490	3,951	1,633	1,112	473	237	45	26	7	4	2
TUPELO AND BLACKGUM	4,647	2,259	808	708	417	177	186	40	20	32	--
ASH	4,102	1,498	1,043	683	433	230	137	42	13	23	--
COTTONWOOD	43	--	43	--	--	--	--	--	--	--	--
BASSWOOD	538	80	80	81	171	79	17	17	6	7	--
YELLOW-POPLAR	30,209	8,990	5,835	4,922	3,880	2,792	1,901	935	450	459	45
BAY AND MAGNOLIA	611	264	76	156	54	49	--	--	12	--	--
BLACK CHERRY	848	367	352	25	15	28	37	9	--	15	--
BLACK WALNUT	2,012	798	573	243	148	159	42	36	13	--	--
SYCAMORE	1,049	137	79	223	273	157	62	27	28	50	13
BLACK LOCUST	3,357	696	1,180	685	458	235	53	36	14	--	--
ELM	1,545	741	301	209	157	67	31	8	--	31	--
OTHER EASTERN HARDWOODS	5,442	2,864	1,154	432	461	250	128	71	29	53	--
TOTAL HARDWOODS	205,326	72,617	45,643	32,106	21,975	14,626	8,924	4,508	2,366	2,378	183
ALL SPECIES	309,015	121,549	77,331	46,217	27,969	16,634	9,456	4,755	2,475	2,446	183

TABLE 14.--*VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	125,156	14,557	34,880	34,665	25,140	11,171	2,686	518	1,539	--	--
LOBLOLLY PINE	45,200	12,677	12,911	5,199	3,263	3,401	1,817	3,479	2,022	431	--
POND PINE	303	--	--	--	--	--	303	--	--	--	--
VIRGINIA PINE	518,952	112,672	158,705	127,974	78,369	29,764	8,470	2,467	531	--	--
PITCH PINE	8,098	1,349	1,743	920	650	1,630	850	646	--	310	--
TABLE-MOUNTAIN PINE	718	147	166	80	325	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	26,373	2,036	1,981	3,825	2,614	4,979	3,565	1,928	1,686	3,435	324
EASTERN HEMLOCK	11,130	452	2,905	--	573	1,216	902	2,045	1,363	1,674	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	21,056	9,459	6,141	3,562	862	581	--	451	--	--	--
TOTAL SOFTWOODS	756,986	153,349	219,432	176,225	111,796	52,742	18,593	11,534	7,141	5,850	324
HARDWOOD:											
SELECT WHITE OAKS	535,846	47,392	58,379	66,483	75,714	78,576	75,691	52,296	36,944	39,264	5,107
SELECT RED OAKS	203,816	12,228	13,267	20,456	29,494	30,537	22,178	19,279	15,109	31,830	9,438
CHESTNUT OAK	366,283	20,257	37,366	56,167	51,468	47,304	49,140	40,688	25,825	30,909	7,159
OTHER WHITE OAKS	23,246	1,719	3,596	3,498	3,870	4,743	1,638	--	919	2,159	1,104
OTHER RED OAKS	395,585	30,889	50,903	52,059	62,749	63,039	43,815	30,255	22,355	34,274	5,247
HICKORY	240,951	26,060	30,739	41,954	39,033	36,721	31,595	13,544	6,497	14,188	620
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	1,181	--	--	374	258	220	--	329	--	--	--
SOFT MAPLE	187,247	32,271	32,222	37,285	25,328	17,747	15,013	8,129	4,344	12,775	2,133
BEECH	49,714	6,003	5,177	9,134	6,028	6,233	4,671	3,970	3,494	4,513	491
SWEETGUM	54,403	9,392	10,972	12,564	9,435	6,628	1,803	1,380	442	792	995
TUPELO AND BLACKGUM	54,505	7,638	7,468	10,667	8,813	5,545	7,003	2,412	1,766	2,647	546
ASH	60,469	8,213	10,764	10,729	10,831	7,966	5,110	4,032	1,255	1,569	--
COTTONWOOD	378	--	378	--	--	--	--	--	--	--	--
BASSWOOD	10,635	159	911	980	3,248	2,320	644	1,020	448	905	--
YELLOW-POPLAR	494,684	30,588	41,966	60,940	75,408	79,069	72,721	48,745	30,560	42,871	11,816
BAY AND MAGNOLIA	7,616	869	885	1,790	999	1,621	331	231	890	--	--
BLACK CHERRY	14,438	2,580	3,908	1,443	1,507	1,250	1,428	1,016	--	1,306	--
BLACK WALNUT	27,649	2,991	4,164	3,619	5,004	5,456	1,722	2,229	1,790	674	--
SYCAMORE	29,122	1,261	627	4,094	6,507	4,705	2,552	1,199	1,478	4,150	2,549
BLACK LOCUST	62,526	7,700	14,488	12,184	10,623	8,652	4,059	2,290	1,323	1,037	170
ELM	24,047	3,595	4,622	4,982	3,379	2,212	1,698	553	--	3,006	--
OTHER EASTERN HARDWOODS	115,225	26,918	25,058	19,023	14,642	10,302	6,338	5,173	2,953	4,818	--
TOTAL HARDWOODS	2,959,568	278,723	357,860	430,425	444,338	420,846	349,150	238,770	158,392	233,687	47,375
ALL SPECIES	3,716,552	432,072	577,292	606,650	556,134	473,588	367,743	250,304	165,533	239,537	47,699

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	124,589	14,392	34,688	34,455	25,140	11,171	2,686	518	1,539	--	--
LOBLOLLY PINE	44,554	12,271	12,911	4,959	3,263	3,401	1,817	3,479	2,022	431	--
POND PINE	303	--	--	--	--	--	303	--	--	--	--
VIRGINIA PINE	498,414	104,642	151,589	123,397	77,829	29,489	8,470	2,467	531	--	--
PITCH PINE	6,233	323	1,214	920	650	1,630	850	646	--	--	--
TABLE-MOUNTAIN PINE	325	--	--	--	325	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	25,395	1,924	1,981	3,825	2,277	4,979	3,565	1,928	1,481	3,435	--
EASTERN HEMLOCK	11,130	452	2,905	--	573	1,216	902	2,045	1,363	1,674	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	19,186	8,592	5,694	3,393	673	581	--	253	--	--	--
TOTAL SOFTWOODS	730,129	142,596	210,982	170,949	110,730	52,467	18,593	11,336	6,936	5,540	--
HARDWOOD:											
SELECT WHITE OAKS	512,472	42,735	55,610	64,217	74,428	75,056	74,029	49,749	35,965	36,654	4,029
SELECT RED OAKS	179,471	10,006	12,206	17,715	26,741	28,761	19,657	16,639	13,544	27,971	6,231
CHESTNUT OAK	297,773	14,567	28,868	43,097	43,618	40,825	40,983	35,481	21,916	23,641	4,777
OTHER WHITE OAKS	20,174	1,540	3,160	2,523	3,432	3,983	1,354	--	919	2,159	1,104
OTHER RED OAKS	379,597	28,640	47,968	49,764	59,998	62,610	43,815	30,043	21,594	31,741	3,424
HICKORY	225,434	21,787	27,483	40,378	36,701	35,568	30,913	12,253	6,260	13,471	620
YELLOW BIRCH	--	--	--	--	--	--	--	--	--	--	--
HARD MAPLE	836	--	--	249	258	--	--	329	--	--	--
SOFT MAPLE	132,460	22,043	20,064	27,898	19,467	11,895	11,824	5,415	3,356	9,438	1,060
BEECH	41,178	5,194	4,257	6,796	4,992	5,075	3,625	3,069	3,494	4,185	491
SWEETGUM	49,153	7,866	9,325	11,791	8,854	6,628	1,803	1,380	442	479	585
TUPELO AND BLACKGUM	39,732	5,570	4,584	6,567	7,201	4,359	6,377	1,829	1,004	2,241	--
ASH	42,516	5,001	7,237	7,887	8,037	5,681	4,504	1,918	682	1,569	--
COTTONWOOD	378	--	378	--	--	--	--	--	--	--	--
BASSWOOD	9,629	159	452	980	3,248	2,320	644	719	448	659	--
YELLOW-POPLAR	473,578	27,871	38,561	59,863	73,317	77,491	71,392	46,334	28,572	40,908	9,269
BAY AND MAGNOLIA	6,064	756	465	1,540	999	1,414	--	--	890	--	--
BLACK CHERRY	7,060	1,141	2,198	273	389	629	1,088	412	--	930	--
BLACK WALNUT	18,445	2,378	3,574	2,142	2,460	3,878	1,188	1,967	858	--	--
SYCAMORE	25,242	592	627	2,916	5,116	4,418	2,197	1,199	1,478	4,150	2,549
BLACK LOCUST	30,399	2,015	6,450	6,756	6,522	5,145	1,544	1,346	621	--	--
ELM	15,283	1,849	1,853	2,574	2,812	1,933	1,143	333	--	2,786	--
OTHER EASTERN HARDWOODS	47,577	7,481	8,026	4,732	7,889	6,279	4,586	3,380	1,523	3,681	--
TOTAL HARDWOODS	2,554,451	209,191	283,346	360,658	396,479	383,948	322,868	213,795	143,568	206,663	34,139
ALL SPECIES	3,284,580	351,787	494,328	531,607	507,209	436,415	341,259	225,131	150,502	212,203	34,139

TABLE 16. --*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1976*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	323,797	126,856	112,736	56,603	15,114	3,010	9,478	--	--
LOBLOLLY PINE	95,032	16,834	14,838	17,209	10,147	20,585	12,556	2,863	--
POND PINE	1,618	--	--	--	1,618	--	--	--	--
VIRGINIA PINE	940,233	428,820	319,731	134,558	41,554	12,717	2,853	--	--
PITCH PINE	21,913	2,798	2,706	7,932	4,642	3,835	--	--	--
TABLE-MOUNTAIN PINE	1,538	--	1,538	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	105,898	13,824	9,817	23,923	18,519	10,600	8,572	20,643	--
EASTERN HEMLOCK	41,842	--	2,439	5,513	4,618	11,102	7,795	10,375	--
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	21,425	13,533	3,355	3,039	--	1,498	--	--	--
TOTAL SOFTWOODS	1,553,296	602,665	467,160	248,777	96,212	63,347	41,254	33,881	--
HARDWOOD:									
SELECT WHITE OAKS	1,477,664	--	244,151	290,575	317,234	231,706	177,380	192,592	24,026
SELECT RED OAKS	578,375	--	85,417	106,767	79,571	72,496	61,826	138,778	33,520
CHESTNUT OAK	870,722	--	137,615	152,308	169,957	158,388	103,812	121,274	27,368
OTHER WHITE OAKS	59,629	--	12,824	16,667	6,318	--	4,883	12,204	6,733
OTHER RED OAKS	1,066,661	--	195,045	242,978	189,541	140,805	107,150	170,600	20,542
HICKORY	577,935	--	124,375	143,114	138,817	59,923	32,257	75,633	3,816
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	2,445	--	927	--	--	1,518	--	--	--
SOFT MAPLE	249,802	--	61,788	44,510	49,214	24,090	15,963	47,879	6,358
BEECH	97,454	--	18,291	19,277	14,226	12,231	14,129	17,203	2,097
SWEETGUM	85,205	--	31,378	28,393	8,689	7,223	2,410	3,062	4,050
TUPELO AND BLACKGUM	89,278	--	22,429	16,166	26,379	8,275	4,718	11,311	--
ASH	88,278	--	26,779	21,989	19,285	8,867	3,354	8,004	--
COTTONWOOD	--	--	--	--	--	--	--	--	--
BASSWOOD	31,916	--	11,083	9,144	2,820	3,206	2,176	3,487	--
YELLOW-POPLAR	1,653,656	--	258,320	332,412	344,910	244,369	160,796	249,361	63,488
BAY AND MAGNOLIA	15,872	--	3,363	6,713	--	--	5,796	--	--
BLACK CHERRY	15,174	--	1,443	2,487	4,694	1,889	--	4,661	--
BLACK WALNUT	36,254	--	8,483	13,543	4,185	6,983	3,060	--	--
SYCAMORE	93,282	--	15,610	16,917	9,481	5,598	7,312	22,779	15,585
BLACK LOCUST	54,713	--	22,870	18,657	5,722	5,084	2,380	--	--
ELM	37,857	--	9,829	7,581	4,796	1,526	--	14,125	--
OTHER EASTERN HARDWOODS	107,499	--	27,233	23,869	18,635	14,002	6,811	16,949	--
TOTAL HARDWOODS	7,289,671	--	1,319,253	1,514,067	1,414,474	1,008,179	716,213	1,109,902	207,583
ALL SPECIES	8,842,967	602,665	1,786,413	1,762,844	1,510,686	1,071,526	757,467	1,143,783	207,583

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	34,658	23,817
EASTERN WHITE PINE	1,576	145
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	1,582	928
TOTAL SOFTWOODS	37,816	24,890
HARDWOOD:		
SELECT WHITE AND RED OAKS	25,282	21,719
OTHER WHITE AND RED OAKS	26,500	14,566
HICKORY	7,556	2,631
YELLOW BIRCH	--	--
HARD MAPLE	39	--
SWEETGUM	2,004	1,676
ASH,WALNUT, AND BLACK CHERRY	3,610	340
YELLOW-POPLAR	25,557	10,967
TUPELO AND BLACKGUM	1,012	751
BAY AND MAGNOLIA	202	--
OTHER EASTERN HARDWOODS	11,641	4,709
TOTAL HARDWOODS	103,403	57,359
ALL SPECIES	141,219	82,249

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	83,582	53,249
EASTERN WHITE PINE	6,990	922
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	2,941	2,524
TOTAL SOFTWOODS	93,513	56,695
HARDWOOD:		
SELECT WHITE AND RED OAKS	91,824	61,927
OTHER WHITE AND RED OAKS	92,902	48,721
HICKORY	26,638	8,062
YELLOW BIRCH	--	--
HARD MAPLE	428	--
SWEETGUM	3,849	4,736
ASH,WALNUT, AND BLACK CHERRY	7,550	--
YELLOW-POPLAR	113,687	49,716
TUPELO AND BLACKGUM	2,019	1,903
BAY AND MAGNOLIA	847	--
OTHER EASTERN HARDWOODS	37,949	15,114
TOTAL HARDWOODS	377,693	190,179
ALL SPECIES	471,206	246,874

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1975*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	8,594	19,785
EASTERN WHITE PINE	110	702
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	134	--
TOTAL SOFTWOODS	8,838	20,487
HARDWOOD:		
SELECT WHITE AND RED OAKS	2,524	7,964
OTHER WHITE AND RED OAKS	3,359	12,587
HICKORY	897	3,595
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	611	--
ASH,WALNUT, AND BLACK CHERRY	517	497
YELLOW-POPLAR	898	1,034
TUPELO AND BLACKGUM	115	494
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	2,665	4,844
TOTAL HARDWOODS	11,586	31,015
ALL SPECIES	20,424	51,502

TABLE 20.--*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	119,931	4,013	5,192	30,948	79,778	95,822	3,767	4,854	28,991	58,210
OTHER PUBLIC	186,280	41,931	791	41,067	102,491	160,378	39,645	791	34,753	85,189
FOREST INDUSTRY	231,709	81,374	4,319	49,801	96,215	207,970	80,890	4,149	40,829	82,102
FARMER	1,374,787	257,333	30,525	294,436	792,493	1,217,710	244,653	29,283	248,244	695,530
MISCELLANEOUS PRIVATE	1,803,845	313,776	17,732	465,299	1,007,038	1,602,700	305,463	16,634	408,516	872,087
ALL OWNERSHIPS	3,716,552	698,427	58,559	881,551	2,078,015	3,284,580	674,418	55,711	761,333	1,793,118

TABLE 21.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	97,008	7,838	6,285	38,754	44,131	186,480	3,613	11,808	54,162	116,897
OTHER PUBLIC	196,429	65,790	2,056	44,476	84,107	283,495	17,833	--	77,923	187,739
FOREST INDUSTRY	277,214	150,122	2,610	57,254	67,228	228,525	6,680	8,935	61,144	151,766
FARMER	1,499,283	423,377	39,298	248,143	788,465	1,875,401	66,747	46,376	487,437	1,274,841
MISCELLANEOUS PRIVATE	2,081,988	596,032	25,194	493,944	966,818	2,117,144	46,099	26,603	718,065	1,326,377
ALL OWNERSHIPS	4,151,922	1,243,159	75,443	882,571	1,950,749	4,691,045	140,972	93,722	1,398,731	3,057,620

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	3,842	91	260	1,478	2,013	1,389	--	145	485	759
OTHER PUBLIC	5,773	1,458	15	1,491	2,809	8,077	1,388	--	1,070	5,619
FOREST INDUSTRY	11,153	5,660	369	1,868	3,256	10,141	5,594	79	1,164	3,304
FARMER	52,392	13,377	1,519	11,839	25,657	18,996	3,706	496	3,822	10,972
MISCELLANEOUS PRIVATE	68,059	14,072	995	19,547	33,445	43,646	13,129	353	9,854	20,310
ALL OWNERSHIPS	141,219	34,658	3,158	36,223	67,180	82,249	23,817	1,073	16,395	40,964

TABLE 23.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1975*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	15,273	253	1,505	5,299	8,216	2,806	--	922	1,346	538
OTHER PUBLIC	22,572	5,504	57	6,691	10,320	32,969	6,584	--	6,183	20,202
FOREST INDUSTRY	24,596	8,252	377	6,031	9,936	20,418	7,586	--	5,031	7,801
FARMER	178,308	30,828	5,153	48,566	93,761	70,316	9,832	2,524	19,730	38,230
MISCELLANEOUS PRIVATE	230,457	38,745	2,839	78,725	110,148	120,365	29,247	--	34,068	57,050
ALL OWNERSHIPS	471,206	83,582	9,931	145,312	232,381	246,874	53,249	3,446	66,358	123,821

TABLE 24.--*AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1976*

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*	*BOARD FEET*	*CUBIC FEET*
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,896	951	--	--	2,482	1,401	1,525	813	1,652	884	2,199	1,020
HARDWOOD	472	198	--	--	467	236	82	53	480	211	614	237
TOTAL	2,368	1,149	--	--	2,949	1,637	1,607	866	2,132	1,095	2,813	1,257
OTHER TIMBER:												
SOFTWOOD	--	31	--	--	--	26	--	5	--	54	--	21
HARDWOOD	--	30	--	--	--	27	--	19	--	44	--	23
TOTAL	--	61	--	--	--	53	--	24	--	98	--	44
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	824	371	1,686	512	802	393	373	205	1,167	458	541	319
HARDWOOD	1,271	591	466	431	3,027	1,233	258	193	1,915	787	824	470
TOTAL	2,095	962	2,152	943	3,829	1,626	631	398	3,082	1,245	1,365	789
OTHER TIMBER:												
SOFTWOOD	--	15	--	--	--	202	--	6	--	8	--	12
HARDWOOD	--	112	--	266	--	46	--	45	--	162	--	74
TOTAL	--	127	--	266	--	248	--	51	--	170	--	86
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	175	65	294	84	333	88	265	82	176	67	145	59
HARDWOOD	3,889	1,331	4,135	1,389	4,866	1,420	3,936	1,368	4,228	1,383	3,571	1,283
TOTAL	4,064	1,396	4,429	1,473	5,199	1,508	4,201	1,450	4,404	1,450	3,716	1,342
OTHER TIMBER:												
SOFTWOOD	--	4	--	10	--	2	--	--	--	3	--	4
HARDWOOD	--	200	--	357	--	306	--	243	--	181	--	190
TOTAL	--	204	--	367	--	308	--	243	--	184	--	194
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	14	16	--	--	--	--	--	--	31	25	--	8
HARDWOOD	2,759	920	--	--	--	--	--	--	2,785	871	2,736	963
TOTAL	2,773	936	--	--	--	--	--	--	2,816	896	2,736	971
OTHER TIMBER:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	--
HARDWOOD	--	379	--	--	--	--	--	--	--	475	--	296
TOTAL	--	379	--	--	--	--	--	--	--	475	--	296
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	609	286	437	128	825	389	826	418	628	299	551	256
HARDWOOD	2,856	1,001	3,757	1,290	3,795	1,155	1,656	604	3,053	1,029	2,782	1,016
TOTAL	3,465	1,287	4,194	1,418	4,620	1,544	2,482	1,022	3,681	1,328	3,333	1,272
OTHER TIMBER:												
SOFTWOOD	--	11	--	9	--	22	--	3	--	15	--	8
HARDWOOD	--	159	--	348	--	227	--	113	--	156	--	152
TOTAL	--	170	--	357	--	249	--	116	--	171	--	160
ALL TIMBER	3,465	1,457	4,194	1,775	4,620	1,793	2,482	1,138	3,681	1,499	3,333	1,432

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1957, 1965, AND 1976*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1965-1976
	1957	1965	1976	
	- - - - - - - - - *ACRES* - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	859,200	869,615	827,115	- 42,500
HARDWOOD TYPES	1,633,300	1,589,223	1,724,943	+135,720
TOTAL	2,492,500	2,458,838	2,552,058	+ 93,220
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	110,300	133,927	145,257	+ 11,330
UNPRODUCTIVE	24,200	11,070	--	- 11,070
TOTAL	134,500	144,997	145,257	+ 260
NONFOREST LAND:				
CROPLAND	786,400	632,516	506,627	-125,889
PASTURE AND RANGE	781,000	861,362	794,071	- 67,291
OTHER	230,800	331,623	400,455	+ 68,832
TOTAL	1,798,200	1,825,501	1,701,153	-124,348
ALL LAND[1]	4,425,200	4,429,336	4,398,468	- 30,868

[1] EXCLUDES ALL WATER AREAS.

TABLE 26.--*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
SAWTIMBER (IN THOUSAND BOARD FEET)											
SOFTWOOD	1957	1,066,060	--	--	426,324	361,492	184,872	53,716	17,183	14,002	8,471
	1965	1,038,099	--	--	426,751	310,451	154,513	70,898	40,519	17,029	17,938
	1976	1,553,296	--	--	602,665	467,160	248,777	96,212	63,347	41,254	33,881
HARDWOOD	1957	4,679,528	--	--	--	963,426	1,079,337	768,533	588,500	435,026	844,706
	1965	5,377,847	--	--	--	998,839	1,242,771	926,738	616,461	471,051	1,121,987
	1976	7,289,671	--	--	--	1,319,253	1,514,067	1,414,474	1,008,179	716,213	1,317,485
GROWING STOCK (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	540,033	138,347	138,881	120,943	85,682	38,986	10,380	3,075	2,354	1,385
	1965	551,001	130,522	166,500	121,064	73,584	32,584	13,700	7,251	2,863	2,933
	1976	730,129	142,596	210,982	170,949	110,730	52,467	18,593	11,336	6,936	5,540
HARDWOOD	1957	1,809,292	189,343	241,724	273,226	289,578	273,735	175,304	124,788	87,197	154,397
	1965	1,970,284	184,916	240,824	287,533	300,222	315,184	211,391	130,717	94,418	205,079
	1976	2,554,451	209,191	283,346	360,658	396,479	383,948	322,666	213,795	143,566	240,802
ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	561,529	149,212	144,428	124,695	86,535	39,180	10,380	3,133	2,422	1,544
	1965	573,034	140,773	173,149	124,815	74,318	32,754	13,700	7,356	2,919	3,250
	1976	758,986	153,349	219,432	176,225	111,796	52,742	18,593	11,534	7,141	6,174
HARDWOOD	1957	2,113,692	252,343	305,241	326,027	324,632	300,000	189,714	139,379	96,205	180,151
	1965	2,293,885	246,444	304,106	343,094	336,551	345,435	228,737	145,967	104,169	239,382
	1976	2,959,566	278,723	357,860	430,425	444,338	420,846	349,150	238,770	158,392	281,062

[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Sheffield, Raymond M.
1976. Forest statistics for the Northern Piedmont of Virginia, 1976. USDA For. Serv. Resour. Bull. SE-39, 33 p. Southeast. For. Exp. Stn., Asheville, N. C.

Since 1965, the area of commercial forest land increased nearly 4 percent in this 18-county area. Commercial forests now occupy 2.6 million acres, or 58 percent of the total land area. Private nonindustrial landowners hold 86 percent of these forests. The inventory of softwood and hardwood growing stock increased by 33 and 30 percent, respectively. All major softwood and hardwood species increased in volume. Net annual growth of growing stock averaged 55 cubic feet per acre of commercial forest land, 72 percent more than the volume of annual timber removals.

Keywords: Forest trends, commercial forest land, forest ownership, timber volume, timber growth, timber removals.

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Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
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3.62 SE 40

SDA Forest Service Resource Bulletin SE-40 August 1977

Changes in Output of Industrial Timber Products in Florida, 1969-1975

Richard L. Welch
and
Thomas R. Bellamy

U.S. Department of Agriculture-Forest Service
Southeastern Forest Experiment Station
Asheville, North Carolina

Forest Survey Regions in Florida.

Changes in Output of Industrial Timber Products in Florida, 1969-1975

by

Richard L. Welch, Resource Analyst

and

Thomas R. Bellamy, Associate Mensurationist

Abstract.--The total output of industrial timber products in Florida amounted to over 300 million cubic feet in 1975, 8 percent less than in 1969 and 16 percent less than in 1973. The largest decline was in the production of roundwood products. Production of plant by-products in 1975 was 6 percent below that in 1973 but was well above the 1969 total. The general statewide changes were also seen in each of the four Forest Survey regions. Volume of unused plant residues dropped by 82 percent between 1969 and 1975 and was less than 2 million cubic feet in 1975.

Keywords: Roundwood products, plant byproducts, softwood products, hardwood products, unused plant residues, roundwood receipts.

Between detailed timber surveys, which are made at 10-year intervals in Southeastern States, the easiest way to keep track of timber harvesting in a State is to ask forest industries how much wood they are using and where it is coming from. Such industry canvasses were made in Florida in 1969, 1971, 1973, and 1975. This Bulletin reports the principal changes and trends in the use of Florida wood by forest industries between 1969 and 1975.

Since one objective was to learn how much wood was being removed from the State's forests, only primary processing plants were considered. A plant that converts boards from a sawmill into furniture, for example, was classed as a secondary processor and was not considered here. Total use of wood by primary processing plants is here called output of industrial timber products. The output was divided into two components--roundwood products and plant by-products. The second component consists of those initial residues from primary plants that were used as a roundwood substitute.

In some parts of Florida, utilization of forests for timber products was much heavier than in others. Output of industrial timber products is therefore reported for regions within the State as well as for Florida as a whole. The Northeast and Northwest Regions have almost 80 percent of the commercial forest land and produce over 90 percent of the timber products in Florida.

Although central and south Florida produce less than 10 percent of the timber products output, they do make a significant contribution to the production of pulpwood and cypress products.

STATEWIDE TRENDS

The total output of industrial timber products in Florida amounted to over 300 million cubic feet in 1975, 8 percent less than in 1969 and 16 percent less than in 1973. The decline between 1973 and 1975 is viewed as part of the nationwide economic slump rather than a local phenomenon. The number of primary wood-using plants did drop from 139 in 1969 to 125 in 1975 (fig. 1). However, the 1975 figure exceeded that of 1973 by two plants and the number of sawmills increased from 85 to 92 during the 2-year period. The total roundwood receipts dropped by less than 3 percent between 1969 and 1975 and less than 5 percent between 1973 and 1975. Thus, despite the decline in products output, there has been little change in Florida's industrial capacity or demand.

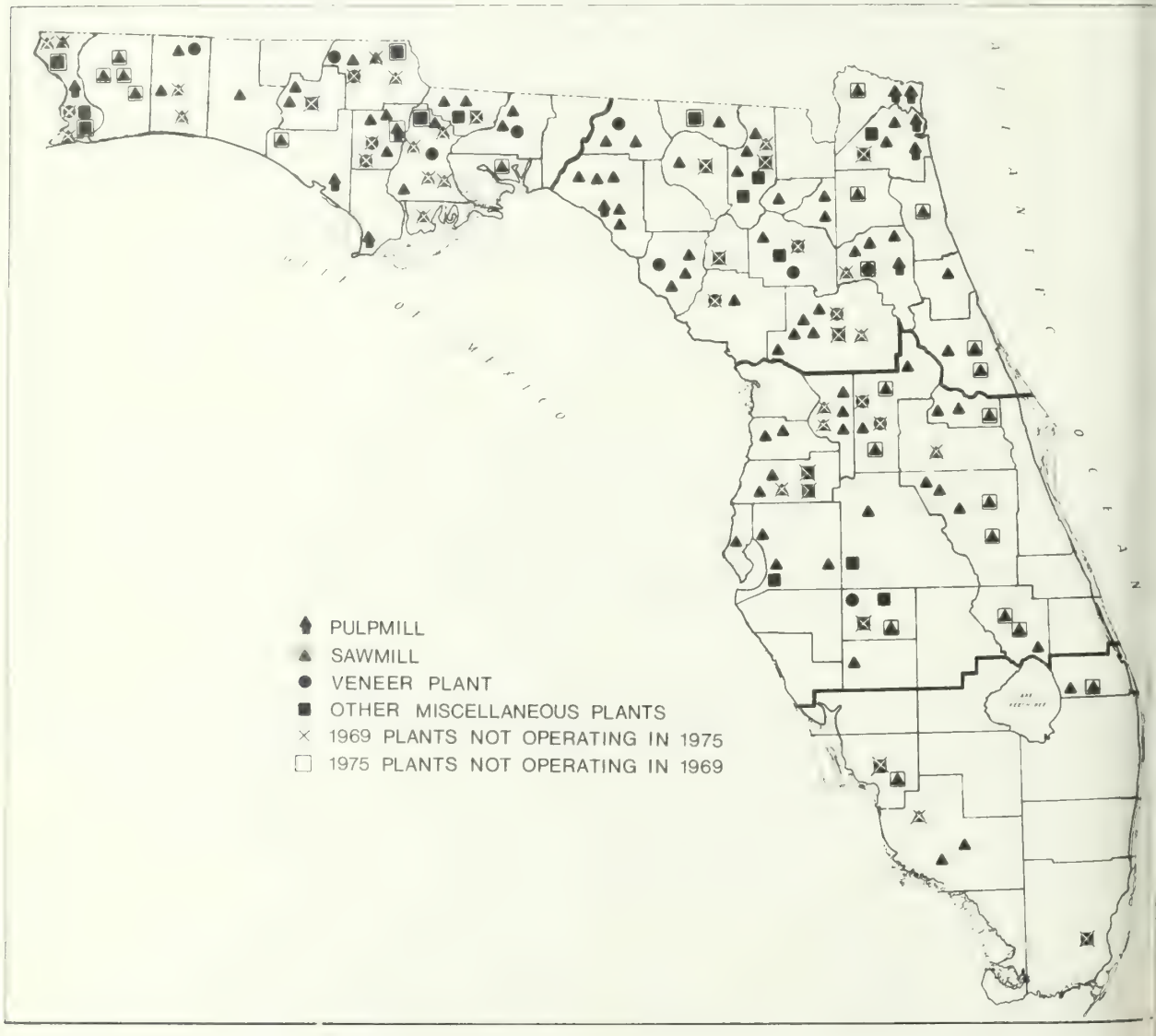

Figure 1.--Location of primary wood-using plants in Florida, 1975.

Total roundwood receipts by Florida mills in 1975 were 72 million cubic feet more than the roundwood harvested in Florida that year. This difference between roundwood receipts and output was almost double the average of previous years. With the bulk of Florida's plants being located in the northern part of the State, they can draw wood from Alabama and Georgia almost as easily as from Florida, and the amount of wood shipped into the State can vary considerably from year to year depending on availability and price. There is no indication that the large increase in roundwood imports in 1975 resulted from a general timber shortage in Florida. The 1970 timber survey showed that the net annual growth in the State was exceeding the total timber removals by 184 million cubic feet in 1969. If nothing has happened to drastically reduce the net annual growth, Florida's timber supply should be more than adequate to meet the demands of the State's forest industry.

Plant byproducts were increasingly used as a roundwood substitute between 1969 and 1975. Such byproducts comprised 14 percent of the total output of timber products in 1975, 5 percent more than in 1969. The increased production of plant byproducts cannot be attributed solely to improved utilization of plant residues. A growing number of plants that sell a large quantity of their byproducts, mainly as pulpwood, are purchasing roundwood that is not suited for their principal product for sole purpose of converting it into plant byproducts. Almost 11 million cubic feet of this type of material was included in the 44 million cubic feet of initial plant residues in 1975.

Softwood species have provided the bulk of Florida's industrial timber products in past years and continued to do so in 1975. Softwood production increased substantially between 1969 and 1973, then dropped off sharply between 1973 and 1975. The production of hardwood products declined throughout the 7-year period. Softwood products made up 86 percent of the total output in 1969 and 88 percent in 1975. The decline in the output of hardwood products was limited to those from roundwood. Output of hardwood products from plant byproducts increased. Output of round cypress products also increased, by 67 percent between 1969 and 1975.

The proportions of Florida's harvest used for various products have changed considerably. Pulpwood, the leading product, has been on a downward trend since 1969 when it made up 74 percent of the total output. By 1975 it accounted for only 71 percent. During the same period saw-log production has been increasing, from 18 to 25 percent of the total production. The harvest of veneer logs has varied more than any other product, reaching a high of 25 million cubic feet in 1971 and a low of 6 million cubic feet in 1975. The production of other miscellaneous products such as poles, piling, and fencing collectively followed the same trend as the total products output, increasing through 1973 and then dropping off through 1975.

REGIONAL CHANGES

The detailed timber survey of 1970 showed that the net growth of Florida's forests was exceeding the total removals in all four Survey Regions. However, the difference between net growth and total removals was much smaller in some regions than in others. Therefore, it is necessary to examine the changes in industrial timber products output by region.

Northeast Region

Harvesting in the Northeast Region accounted for 55 percent of the State's industrial timber products output from roundwood in 1969 and 58 percent in 1975. This region had not only the largest timber products output but also the largest number of mills and the greatest volume of receipts. The 1970 forest survey showed that this region had the largest timber inventory and the largest net annual growth. It may well be described as the hub of Florida's forest industries.

This region was the only one to have an upward trend in its timber products output between 1969 and 1973, and the 1975 output was only 3 percent below the 1969 level. The greatest gains in the region were in the western part along the Gulf Coast, and several counties in that area maintained their gains through 1975 (fig. 2). During the early seventies the number of primary wood-using plants in the region decreased from 56 to 51; however, one new plant opened since 1973. The trend toward fewer but larger plants is common in the Southeast.

Figure 2.--Changes in output of roundwood products in each county in Florida, 1969-1975, in million cubic feet.

Almost 85 percent of the timber products harvested in 1975 were delivered to mills in the region, and over three times as much roundwood was shipped into the region as was shipped out. Demand for roundwood products was high. Each of the 21 counties in the region was providing roundwood products for 10 or more mills (fig. 3). Most of the roundwood shipped into the region was pulpwood from Georgia.

Figure 3.--Number of mills that drew roundwood from each county in Florida, 1975.

The Northeast Region not only led Florida in total products output in 1975, it led in the production of each major product except veneer logs. Pulpwood was the leading product and made up 74 percent of the output, 7 percent less than in 1969. The output of saw logs and miscellaneous products was well above the 1969 level in 1975, even though the output of these products was below the 1973 level.

Northwest Region

In the Northwest Region, the output of industrial timber products declined over 10 percent between 1969 and 1975. Unlike the Northeast Region, the decline was steady throughout the 7-year period. It was attributed almost solely to a sharp drop in the harvest of hardwood products. The output of round softwood products did drop during the period, but this decline was almost completely offset by an increase in use of softwood plant byproducts.

The output of pulpwood and veneer logs declined throughout the period for both species groups. The output of saw logs remained fairly constant through 1973, then rose sharply in 1975. The increase in saw logs was limited to softwood species. Output of hardwood saw logs dropped by 50 percent while the total output of miscellaneous products doubled.

Many primary wood-using plants are located near the boundary between this region and the Southwest Region of Georgia. As a result, a high volume of wood is exchanged between regions. The Northwest Region shipped out the

largest volume of products of any of Florida's regions, and it received the largest percent of its receipts from outside. This region also had the largest decline in number of plants, losing six sawmills and four veneer mills during the 7-year period. One pulpmill and one miscellaneous mill were added, so there was a net loss of eight mills since 1969.

Central Region

The output of industrial timber products in the Central Region declined 21 percent between 1969 and 1975. The decline was steady throughout the period and was in both species groups and for both roundwood and plant byproducts. Output of miscellaneous products increased slightly and the harvesting of cypress products increased by about one-third.

The mill receipts amounted to only half the products output in 1975, and one-third of the region's output was retained. The total number of mills in the region dropped by one during the period. This net change was the result of the loss of three miscellaneous plants and two veneer mills and the addition of four sawmills. Although the leading product was pulpwood, the region had no pulpmills. This accounts for the large volume of wood being shipped out of the region.

South Region

The South Region produced only 1.8 million cubic feet of industrial timber products in 1975, about half as much as in 1969. The situation in this region closely parallels that of the Central Region in many respects. The decline in products output continued throughout the period, affecting products from both roundwood and plant byproducts. Output of miscellaneous products increased slightly since 1969, but production of saw logs and pulpwood declined. There were no veneer logs produced in the region. Almost 72 percent of the total output was pulpwood, and it was all shipped out of the region because, like the Central Region, the South Region had no pulpmills. The total number of mills in the region stood at six in 1969, reached a high of eight in 1971, then dropped to five by 1975. The five remaining mills were all sawmills.

PLANT RESIDUES

Of the 329.2 million cubic feet of roundwood receipts in the State in 1975, 280.7 million cubic feet were used for principal products. The remaining 48.5 million cubic feet consisted of 37.5 million cubic feet of initial plant residues and 11 million cubic feet of chipped roundwood described earlier. Subsequently, 32.7 million cubic feet of initial plant residues were used as roundwood substitutes and processed as small saw logs, pulpwood, and other miscellaneous products, and 2.9 million cubic feet were used for fuel. Only 1.9 million cubic feet or about 0.5 percent of the roundwood receipts were not used. The unused volume in 1969 was 10.8 million cubic feet or 3 percent of receipts.

Less than 5 percent of the initial softwood residues and 8 percent of the hardwood residues were not used. Almost 100 percent of the planer shavings produced at primary wood-using plants were utilized, over 96 percent of the coarse residues were used, and 90 percent of the sawdust and other fine residues were converted to some product.

The most outstanding improvement in utilization of plant residues occurred in bark utilization. In 1969, only 28 percent of the bark residues were being used, but by 1975 bark utilization had risen to 89 percent. Almost 79 percent of the bark residues were used as fuel.

HOW THE STUDY WAS MADE

Two methods were used to obtain data on Florida's output of industrial timber products. All pulpmills that drew wood from Florida were canvassed by mail and all other primary wood-using industries were canvassed by personal interviews. The pulpmills were canvassed by the Southeastern Forest Experiment Station in cooperation with the American Pulpwood Association. Interviews at other plants were conducted by the Florida Division of Forestry, and the data were processed by the Southeastern Station.

Detailed data from the surveys appear in Appendix tables 1-12. Some small mills may have been missed, and some reporting errors exist. Although these omissions and errors have little or no effect on the State or regional figures presented, they could greatly affect some of the county figures. County figures, therefore, should be used only in compiling information on groups of counties.

APPENDIX

Definitions of Terms

Coarse residues.--Wood residues suitable for chipping, such as slabs, edgings, and veneer cores.

Fine residues.--Wood residues not suitable for chipping, such as sawdust and shavings.

Growing-stock trees.--Live trees of commercial species that either contain or are capable of producing at least one 12-foot saw log.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad leaved and deciduous.

Industrial wood.--All roundwood products except fuelwood.

Net annual growth.--The increase in volume for a specific year.

Plant byproducts.--Wood products, such as pulp chips, obtained incidentally to production of other manufactured products.

Primary wood-using plants (industries).--Those plants or industries that utilized roundwood products in the manufacture of their principal products. (Plants that utilize only plant byproducts as a substitute for roundwood are included.)

Roundwood products.--Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timber products.--Roundwood products and plant byproducts.

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; by cultural operations such as stand improvement; or by land clearing or changes in land use.

Unused plant residues.--Wood material from manufacturing plants not utilized for some product.

Conversion Factors

Cubic feet of wood per standard unit

Product	Standard unit	Softwood	Hardwood
Saw logs	Thousand board feet [1]	173.022	157.290
Veneer logs	Thousand board feet [1]	186.947	173.881
Pulpwood	Standard cords	72.900	67.900
Other products	Thousand cubic feet	.001	.001
Plant residues	Green tons	30.851	28.845

[1] International $\frac{1}{4}$-inch rule.

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12. Roundwood products output, by species group, year, and county, in Florida

Table 1.--Output of industrial timber products, by source of material, year, product, and species group, Florida

Product and species group	Total output			Roundwood output			Byproduct output		
	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975
	Thousand cubic feet								
Saw logs:									
Softwood	43,791	58,650	57,754	43,791	57,724	56,956	--	926	798
Hardwood	9,363	8,938	6,713	9,363	8,938	6,713	--	--	--
Total	53,154	67,588	64,467	53,154	66,662	63,669	--	926	798
Veneer logs and bolts:									
Softwood	4,815	10,696	1,849	4,815	10,696	1,849	--	--	--
Hardwood	10,842	10,964	4,362	10,842	10,964	4,362	--	--	--
Total	15,657	21,660	6,211	15,657	21,660	6,211	--	--	--
Pulpwood:[1/]									
Softwood	224,594	227,530	193,749	200,528	198,463	169,131	24,066	29,067	24,618
Hardwood	24,682	21,165	22,611	18,227	15,315	14,531	6,455	5,850	8,080
Total	249,276	248,695	216,360	218,755	213,778	183,662	30,521	34,917	32,698
Miscellaneous:									
Softwood	5,829	16,449	12,590	5,785	6,814	3,341	44	9,635	9,249
Hardwood	1,012	1,241	914	829	180	--	183	1,061	914
Total	6,841	17,690	13,504	6,614	6,994	3,341	227	10,696	10,163
All industrial:									
Softwood	279,029	313,325	265,942	254,919	273,697	231,277	24,110	39,628	34,665
Hardwood	45,899	42,308	34,600	39,261	35,397	25,606	6,638	6,911	8,994
Total	324,928	355,633	300,542	294,180	309,094	256,883	30,748	46,539	43,659

1/ Roundwood chipped at other primary wood-using plants is included in byproduct output figures.

Table 1.--Output of industrial timber products, by source of material, year, product, and species group, Northeast Region

Product and species group	Total output			Roundwood output			Byproduct output		
	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975
	Thousand cubic feet								
Saw logs:									
Softwood	22,005	35,758	30,979	22,005	34,832	30,979	--	926	--
Hardwood	2,981	4,678	3,500	2,981	4,678	3,500	--	--	--
Total	24,986	40,436	34,479	24,986	39,510	34,479	--	926	--
Veneer logs and bolts:									
Softwood	1,610	7,190	1,185	1,610	7,190	1,185	--	--	--
Hardwood	2,627	4,834	1,257	2,627	4,834	1,257	--	--	--
Total	4,237	12,024	2,442	4,237	12,024	2,442	--	--	--
Pulpwood:[1/]									
Softwood	131,351	139,017	111,371	119,659	120,877	98,062	11,692	18,140	13,309
Hardwood	11,505	12,365	14,752	9,713	9,836	11,092	1,792	2,529	3,660
Total	142,856	151,382	126,123	129,372	130,713	109,154	13,484	20,669	16,969
Miscellaneous:									
Softwood	3,936	11,220	7,464	3,921	3,029	2,027	15	8,191	5,437
Hardwood	822	1,146	711	673	180	--	149	966	711
Total	4,758	12,366	8,175	4,594	3,209	2,027	164	9,157	6,148
All industrial:									
Softwood	158,902	193,185	150,999	147,195	165,928	132,253	11,707	27,257	18,746
Hardwood	17,935	23,023	20,220	15,994	19,528	15,849	1,941	3,495	4,371
Total	176,837	216,208	171,219	163,189	185,456	148,102	13,648	30,752	23,117

1/ Roundwood chipped at other primary wood-using plants is included in byproduct output figures.

Table 3.--Output of industrial timber products, by source of material, year, product, and species group, Northwest Region

Product and species group	Total output			Roundwood output			Byproduct output		
	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975
	Thousand cubic feet								
Saw logs:									
Softwood	14,980	14,909	20,769	14,980	14,909	20,769	--	--	--
Hardwood	5,261	3,846	2,598	5,261	3,846	2,598	--	--	--
Total	20,241	18,755	23,367	20,241	18,755	23,367	--	--	--
Veneer logs and bolts:									
Softwood	3,138	3,042	664	3,138	3,042	664	--	--	--
Hardwood	6,123	4,224	2,507	6,123	4,224	2,507	--	--	--
Total	9,261	7,266	3,171	9,261	7,266	3,171	--	--	--
Pulpwood:[1/]									
Softwood	77,821	76,583	72,394	68,850	66,336	61,617	8,971	10,247	10,777
Hardwood	11,805	7,973	6,065	8,168	5,240	3,055	3,637	2,733	3,010
Total	89,626	84,556	78,459	77,018	71,576	64,672	12,608	12,980	13,787
Miscellaneous:									
Softwood	1,705	3,750	3,691	1,677	3,418	1,236	28	332	2,455
Hardwood	190	91	191	156	--	--	34	91	191
Total	1,895	3,841	3,882	1,833	3,418	1,236	62	423	2,646
All industrial:									
Softwood	97,644	98,284	97,518	88,645	87,705	84,286	8,999	10,579	13,232
Hardwood	23,379	16,134	11,361	19,708	13,310	8,160	3,671	2,824	3,201
Total	121,023	114,418	108,879	108,353	101,015	92,446	12,670	13,403	16,433

1/ Roundwood chipped at other primary wood-using plants is included in byproduct output figures.

Table 4.--Output of industrial timber products, by source of material, year, product, and species group, Central Region

Product and species group	Total output			Roundwood output			Byproduct output		
	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975
	Thousand cubic feet								
Saw logs:									
Softwood	6,347	7,037	5,044	6,347	7,037	4,846	--	--	798
Hardwood	1,121	411	215	1,121	411	215	--	--	--
Total	7,468	8,048	5,259	7,468	8,048	5,061	--	--	798
Veneer logs and bolts:									
Softwood	67	464	--	67	464	--	--	--	--
Hardwood	2,092	1,906	598	2,092	1,906	598	--	--	--
Total	2,159	2,370	598	2,159	2,370	598	--	--	--
Pulpwood:[1/]									
Softwood	12,423	9,706	8,090	9,247	9,026	8,158	3,176	680	532
Hardwood	1,372	827	1,793	346	239	383	1,026	588	1,410
Total	13,795	10,533	10,483	9,593	9,265	8,541	4,202	1,268	1,942
Miscellaneous:									
Softwood	147	1,256	1,281	146	180	64	1	1,076	1,217
Hardwood	--	4	12	--	--	--	--	4	12
Total	147	1,260	1,293	146	180	64	1	1,080	1,229
All industrial:									
Softwood	18,984	19,063	15,615	15,807	17,307	13,068	3,177	1,756	2,547
Hardwood	4,585	3,148	3,018	3,559	2,556	1,596	1,026	592	1,422
Total	23,569	22,211	18,633	19,366	19,863	14,664	4,203	2,348	3,969

1/ Roundwood chipped at other primary wood-using plants is included in byproduct output figures.

Table 5.--Output of industrial timber products, by source of material, year, product, and species group, South Region

Product and species group	Total output			Roundwood output			Byproduct output		
	1969	Average 1971-1973	1975	1969	Average 1971-1973	1975	1969	Average 1971-1975	1975
	Thousand cubic feet								
Saw logs:									
Softwood	459	346	362	459	346	362	--	--	--
Hardwood	--	3	--	--	3	--	--	--	--
Total	459	349	362	459	349	362	--	--	--
Veneer logs and bolts:									
Softwood	--	--	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--
Pulpwood:									
Softwood	2,999	2,224	1,294	2,772	2,224	1,294	227	--	--
Hardwood	--	--	1	--	--	1	--	--	--
Total	2,999	2,224	1,295	2,772	2,224	1,295	227	--	--
Miscellaneous:									
Softwood	41	223	154	41	187	14	--	36	140
Hardwood	--	--	--	--	--	--	--	--	--
Total	41	223	154	41	187	14	--	36	140
All industrial:									
Softwood	3,499	2,793	1,810	3,272	2,757	1,670	227	36	140
Hardwood	--	3	1	--	3	1	--	--	--
Total	3,499	2,796	1,811	3,272	2,760	1,671	227	36	140

Table 1.--Number of primary wood-using plants, by Forest Survey Region, year, and industry

Industry	Total				Forest Survey Region															
					Northeast				Northwest				Central				South			
	1969	1971	1973	1975	1969	1971	1973	1975	1969	1971	1973	1975	1969	1971	1973	1975	1969	1971	1973	1975
	Number of plants																			
Sawmills	91	88	85	92	35	34	36	37	27	26	21	21	25	24	22	29	4	4	6	5
Veneer mills	17	14	14	9	6	5	5	4	8	7	7	4	3	2	2	1	--	--	--	--
Pulpmills	9	9	10	10	6	6	6	6	3	3	4	4	--	--	--	--	--	--	--	--
Other miscellaneous[1/]	22	21	14	14	9	8	4	5	5	6	5	6	6	3	4	3	2	4	1	--
All plants	139	132	123	125	56	53	51	52	43	42	37	35	34	29	28	33	6	8	7	5

1/ Includes treating plants, cooperage, specialty plants, etc.

Table 7.--Industrial roundwood movement, by year, and species group, Florida

Species group	1969	1971	1973	1975
	- - - - Thousand cubic feet - - - -			
Softwood:				
Output	254,919	265,980	280,873	231,277
Retained	210,114	217,921	235,583	197,121
Shipped out	44,805	48,059	45,290	34,156
Shipped in	91,395	93,606	79,273	97,408
Receipts	301,509	311,527	314,856	294,529
Hardwood:				
Output	39,261	38,811	31,624	25,606
Retained	30,917	30,819	24,832	19,440
Shipped out	8,344	7,992	6,792	6,166
Shipped in	5,878	13,217	6,001	15,253
Receipts	36,795	44,036	30,833	34,693
All species:				
Output	294,180	304,791	312,497	256,883
Retained	241,031	248,740	260,415	216,561
Shipped out	53,149	56,051	52,082	40,322
Shipped in	97,273	106,823	85,274	112,661
Receipts	338,304	355,563	345,689	329,222

Table 8.--Industrial roundwood movement, by Forest Survey Region, and species group, 1975

Species group	Forest Survey Region			
	Northeast	Northwest	Central	South
	- - - - - Thousand cubic feet - - - - -			
Softwood:				
Output	132,253	84,286	13,068	1,670
Retained	114,020	58,905	4,064	308
Shipped out	18,233	25,381	9,004	1,362
Shipped in	69,608	44,944	2,668	12
Receipts	183,628	103,849	6,732	320
Hardwood:				
Output	15,849	8,160	1,596	1
Retained	10,693	6,425	1,118	--
Shipped out	5,156	1,735	478	1
Shipped in	7,042	9,097	318	--
Receipts	17,735	15,522	1,436	--
All species:				
Output	148,102	92,446	14,664	1,671
Retained	124,713	65,330	5,182	308
Shipped out	23,389	27,116	9,482	1,363
Shipped in	76,650	54,041	2,986	12
Receipts	201,363	119,371	8,168	320

Table 9.--Volume of unused plant residues at primary wood-using industries, by industry, species group, and type of residue, 1975

Species group and type of residue	All industries	Lumber	Veneer and plywood	Other
	- - - - Thousand cubic feet - - - -			
Softwood:				
Coarse	804	652	--	152
Shavings	2	2	--	--
Other fine	713	675	--	38
Total	1,519	1,329	--	190
Hardwood:				
Coarse	32	32	--	--
Shavings	--	--	--	--
Other fine	411	255	156	--
Total	443	287	156	--
All species:				
Coarse	836	684	--	152
Shavings	2	2	--	--
Other fine	1,124	930	156	38
Total	1,962	1,616	156	190

Table 10.--Volume of unused plant residues, by Forest Survey Region, species group, and industry, 1975

Species group and industry	Total	Forest Survey Region			
		Northeast	Northwest	Central	South
	- - - - - - Thousand cubic feet - - - - - -				
Softwood:					
Lumber	1,329	507	217	592	13
Veneer and plywood	--	--	--	--	--
Other	190	138	42	10	--
Total	1,519	645	259	602	13
Hardwood:					
Lumber	287	94	9	184	--
Veneer and plywood	156	--	156	--	--
Other	--	--	--	--	--
Total	443	94	165	184	--
All species:					
Lumber	1,616	601	226	776	13
Veneer and plywood	156	--	156	--	--
Other	190	138	42	10	--
Total	1,962	739	424	786	13

Table 11.--Disposal of bark at primary wood-using industries, by species group, year, and disposition[1/]

Disposition	All species			Softwood			Hardwood		
	1971	1973	1975	1971	1973	1975	1971	1973	1975
	Thousand green tons								
Fiber products	1.1	4.8	1.9	1.1	3.0	1.0	--	1.8	0.9
Charcoal	12.5	42.5	25.9	11.2	35.3	19.4	1.3	7.2	6.5
Industrial fuel	684.8	1,066.2	890.9	611.0	941.8	780.2	73.8	124.4	110.7
Domestic fuel	0.1	0.3	0.4	0.1	0.3	0.4	--	--	--
Miscellaneous	29.0	65.5	87.5	27.7	52.4	83.2	1.3	13.1	4.3
Not used	456.5	242.7	122.4	372.4	217.4	110.6	84.1	25.3	11.8
Total	1,184.0	1,422.0	1,129.0	1,023.5	1,250.2	994.8	160.5	171.8	134.2

1/ Information on the disposition of bark was not available for 1969.

Table 1.--Timber product output,[1] by species group, year, and county, [illegible]

Survey unit and county	All species			Softwood			Hardwood		
	[illegible]	Average [illegible]	[illegible]	[illegible]	Average [illegible]	[illegible]	1969	Average [illegible]	[illegible]
	Thousand cubic feet								
Northeast:									
Alachua	7,505	9,406	6,079	[illegible]	8,440	5,221	1,913	966	858
Baker	8,373	10,987	8,445	[illegible]	10,928	8,400	1	[illegible]	[illegible]
Bradford	[illegible]	7,060	6,850	[illegible]	6,749	6,567	116	[illegible]	283
Clay	7,226	6,005	3,029	7,009	[illegible]	2,869	217	854	160
Columbia	[illegible]	10,650	10,303	10,483	10,354	9,789	459	296	[illegible]
Dixie	10,982	16,568	11,258	7,557	13,015	10,018	3,425	3,553	1,240
Duval	[illegible]	5,603	[illegible]	5,455	[illegible]	3,325	[illegible]	186	211
Flagler	[illegible]	6,028	4,549	3,285	5,412	4,152	306	616	397
Gilchrist	[illegible]	[illegible]	2,679	1,993	[illegible]	2,424	640	614	[illegible]
Hamilton	[illegible]	4,460	6,753	7,820	[illegible]	6,498	[illegible]	9	[illegible]
Lafayette	9,324	7,288	2,620	8,942	7,119	[illegible]	[illegible]	169	[illegible]
[illegible]	[illegible]	13,162	6,876	[illegible]	10,048	4,347	2,098	3,114	[illegible]
Madison	8,834	9,397	8,225	8,380	8,019	6,835	[illegible]	1,378	[illegible]
Marion	12,173	12,723	11,546	10,436	10,603	9,183	1,737	2,120	2,363
Nassau	10,814	12,457	11,376	10,413	12,201	9,951	401	[illegible]	1,425
Putnam	5,080	7,757	3,466	4,051	6,393	2,854	1,029	1,364	612
St. Johns	5,880	6,807	[illegible]	5,355	5,659	6,767	525	1,148	[illegible]
Suwannee	3,287	4,821	4,832	2,608	4,385	4,250	679	436	582
Taylor	19,266	22,839	21,027	18,190	21,422	19,448	1,076	1,417	1,579
Union	4,497	4,324	2,214	4,469	[illegible]	2,105	28	425	109
Volusia	[illegible]	[illegible]	5,107	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19,529	15,849
Northwest:									
Bay	5,628	4,903	5,804	[illegible]	4,876	[illegible]	[illegible]	27	85
Calhoun	7,824	8,575	[illegible]	6,692	7,869	[illegible]	[illegible]	706	408
Escambia	7,020	[illegible]	6,218	6,485	8,930	5,964	535	[illegible]	254
Franklin	4,269	[illegible]	5,473	3,979	[illegible]	[illegible]	290	[illegible]	1,030
Gadsden	5,312	5,468	7,820	4,006	3,693	6,548	1,306	1,775	1,272
Gulf	4,464	2,805	1,235	2,010	1,620	[illegible]	[illegible]	1,185	248
Holmes	[illegible]	6,454	[illegible]	6,709	5,636	[illegible]	1,643	818	429
Jackson	10,471	9,843	[illegible]	7,164	7,832	6,795	[illegible]	2,011	1,168
Jefferson	6,129	4,118	4,761	5,684	3,372	4,287	445	746	474
Leon	4,167	[illegible]	5,000	[illegible]	3,623	[illegible]	[illegible]	288	[illegible]
Liberty	8,962	6,828	4,680	6,162	5,045	[illegible]	2,800	1,783	962
Okaloosa	4,431	4,738	4,537	[illegible]	3,712	4,440	488	1,026	97
Santa Rosa	[illegible]	8,562	6,538	[illegible]	8,249	6,488	[illegible]	[illegible]	[illegible]
Wakulla	[illegible]	4,741	[illegible]	4,501	4,609	2,922	[illegible]	132	425
Walton	8,453	9,284	11,776	6,796	8,179	[illegible]	1,657	1,105	641
Washington	7,894	5,608	5,810	6,097	5,120	[illegible]	1,797	488	267
Total	108,353	101,016	92,446	[illegible]	87,705	84,286	19,7[illegible]	[illegible]	8,160

Survey unit and county									
	1969	Average		1969	Average 1971-1973		1969	Average	
Central:									
Brevard	769	86						8	--
Citrus		1,149	384						1
De Soto			16	145		16	--	--	--
Hardee		1,881			1,881	1,362	11	--	45
Hernando		1,355	1,996	1,278	1,063		1,156	292	
Highlands	499	502	57	499		57	--	--	--
Hillsborough	1,360	980		1,360	979		--	1	44
Indian River					165	--	--	--	--
	1,310		1,285		1,269	1,272		65	
Manatee		33		206	33		16	--	1
Okeechobee				140		301	--	3	18
Orange	882				432	573	670		1
Osceola	1,439		1,651	1,011	3,466	1,651	428	982	--
Pasco			824	621	1,152	504		888	320
Pinellas		101	26		100	25	--	1	1
Polk	2,737	2,918	3,965	2,737	2,888	3,797	--		168
St. Lucie	81	39	9	81	39		--	--	--
Sarasota			138				--	--	--
Seminole	1,414	660				355		99	423	
Sumter	2,637	1,022				641	346		43
Total	19,366	19,865	14,664	15,807	17,308	13,068			
:									
Broward	--	--	--	--	--	--	--	--	--
Charlotte	520	100	57	520	100	57	--	--	--
Collier	660	400	839	660	400		--	--	1
Dade	170	128	--	170	128	--	--	--	--
Glades	235		360	235	364	360	--	--	--
Hendry	,141	1,377	405	1,141		405	--	--	--
Lee	382	273	--	382	273	--	--	--	--
Martin	73	94	10	73		10	--		--
Monroe	--	--	--	--	--	--	--	--	--
Palm Beach		24	--	91	24	--	--	--	--
	3,272	2,760	1,671	3,272	2,757	1,670	--		
All counties								35,400	25,606

Welch, Richard L., and Thomas R. Bellamy
1977. Changes in output of industrial timber products in Florida, 1969-1975. USDA For. Serv. Resour. Bull. SE-40, 23 p. Southeast. For. Exp. Stn., Asheville, N. C.

The total output of industrial timber products in Florida amounted to over 300 million cubic feet in 1975, 8 percent less than in 1969 and 16 percent less than in 1973. The largest decline was in the production of roundwood products. Production of plant byproducts in 1975 was 6 percent below that in 1973 but was well above the 1969 total. The general statewide changes were also seen in each of the four Forest Survey regions. Volume of unused plant residues dropped by 82 percent between 1969 and 1975 and was less than 2 million cubic feet in 1975.

Keywords: Roundwood products, plant byproducts, softwood products, hardwood products, unused plant residues, roundwood receipts.

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The Forest Service, U. S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

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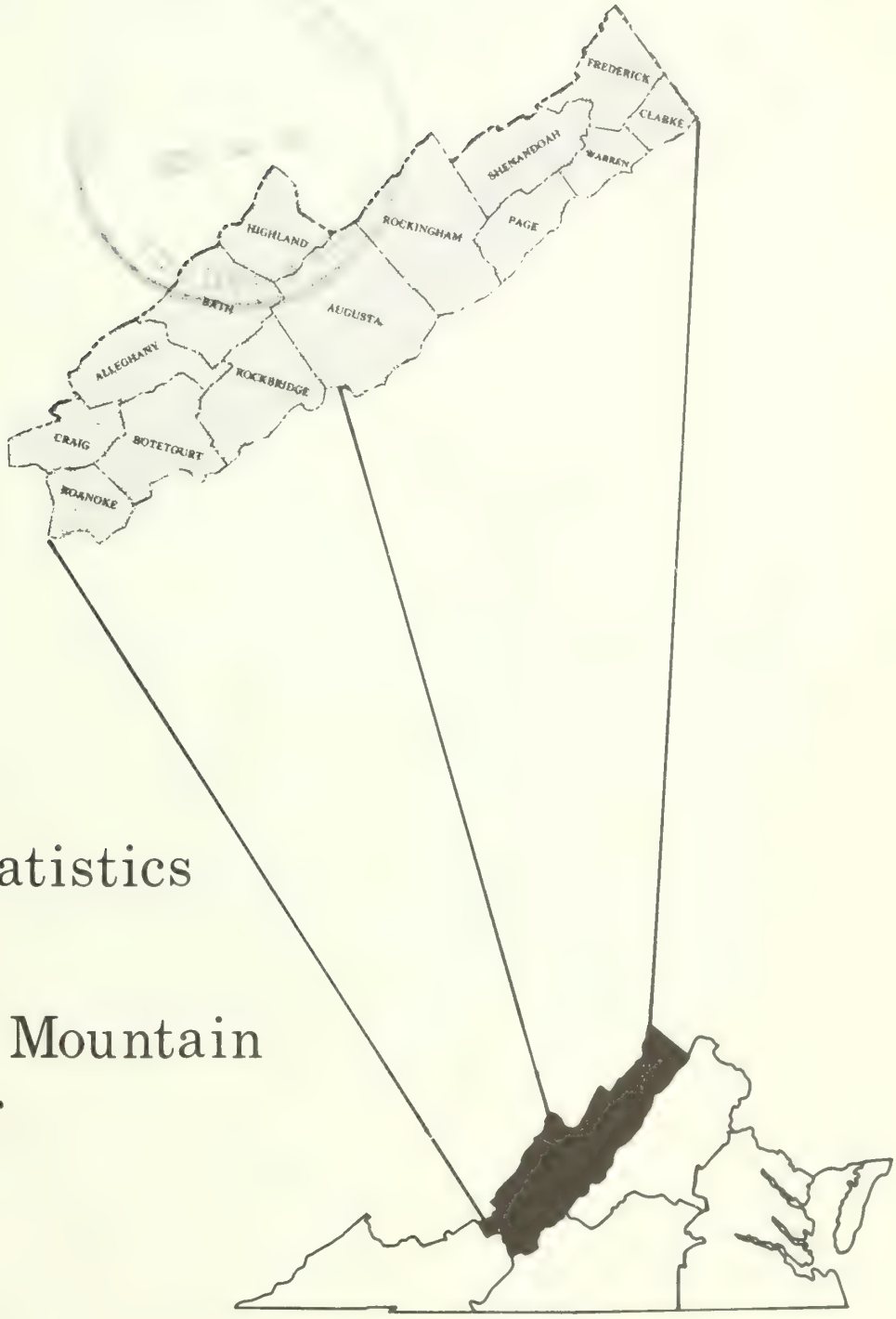

Forest Statistics for the Northern Mountain Region of Virginia 1977

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Northern Mountain Region of Virginia. The inventory was started in August 1976 and completed in December 1976. Three previous inventories, completed in 1940, 1957, and 1966, provide statistics for measuring changes and trends over the past 37 years. In this report, the primary emphasis is on the changes and trends since 1966. Previously reported figures have been adjusted to provide the best estimate of real change.

Forest Survey, now Renewable Resources Evaluation, authorized by the McSweeney-McNary Forest Research Act of 1928, as amended, and by the Forest and Rangeland Renewable Resources Planning Act of 1974, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Renewable Resources Evaluation is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 14-county area covered by this report is one of five survey units in Virginia. Similar reports, USDA Forest Service Resource Bulletins SE-34, 35, and 39, have been issued for the Coastal Plain, Southern Piedmont, and Northern Piedmont units. A comparable report for the Southern Mountain Region will be issued as the Statewide inventory progresses. When completed, this inventory will provide updated statistics on the timber resource for all of Virginia.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Virginia Division of Forestry. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Northern Mountain Region of Virginia
1977

by
Raymond M. Sheffield, Associate Resource Analyst

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HIGHLIGHTS

Since 1966 in the Northern Mountain Region of Virginia--

--area of commercial forest land has increased by 122,000 acres, or by 5 percent. This increase is attributed to the reclassification of 147,000 acres of noncommercial forest to commercial forest land. Altogether, additions to commercial forest land totaled 190,000 acres, while diversions to other land uses totaled only 68,000 acres. Almost two-thirds of the diversions were to agricultural uses and urban development; reclassification of former commercial forest land to productive-reserved forest land accounted for most of the remaining diversion. Commercial forests now occupy 2.6 million acres, or 61 percent of the total land area.

--there has been a 14-percent increase in the area of publicly owned commercial forests, resulting largely from the reclassification of unproductive forest lands on the George Washington and Jefferson National Forests. The national forests and other public agencies are the single largest owner group in this region with a total commercial forest acreage of over 1.0 million acres. Farmer-owned commercial forests have declined by 190,000 acres, or by 24 percent; miscellaneous private owners increased their holdings by 137,000 acres, or by 18 percent. Forest industry lands have more than doubled but total only 73,000 acres.

--only 1 out of 5 acres now classified as commercial forests showed evidence of treatment or significant disturbance. The relatively low level of forestry activity is attributed to the mountainous terrain and predominantly hardwood forests. Only 271,000 acres have experienced harvesting or intermediate cutting. Grazing and other significant disturbances occurred on 184,000 acres. Over 59,000 acres suffered significant damage due to insects, disease, weather, and other natural destructive agents.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 67 to 77 square feet per acre of commercial forest land. There are also 572 saplings per acre, about the same number as found in 1966. Trees which fail to qualify as growing stock because of roughness, rot, poor form, or species make up more than 30 percent of the basal area stocking. Despite the increase in average basal area, over 1.0 million acres were classified as either nonstocked or poorly stocked with growing-stock trees.

--volume of softwood growing stock has increased from 0.4 to 0.5 billion cubic feet, or by 31 percent. The increase occurred across all diameter classes and for most major species. Volume of shortleaf pine declined by 8 percent during the past 11 years. Pitch pine, Virginia pine, white pine, and Table-Mountain pine are the predominant softwood species in the area. The current inventory of softwood growing stock includes 1.7 billion board feet of sawtimber, 43 percent more than in 1966.

--volume of hardwood growing stock has increased from 1.9 to 2.4 billion cubic feet, or by 28 percent. Significant increases in volume were recorded for all major hardwood species, with the oaks accounting for two-thirds of the gain. Again, the increase occurred across all diameter classes. Hardwood sawtimber volume increased from 4.8 to 6.5 billion board feet, or by 34 percent.

In 1976--

--net growth of growing stock averaged 36 cubic feet per acre of commercial forest land and totaled 94 million cubic feet. This average growth per acre is considerably below averages found in Virginia's Piedmont and Coastal Plain regions and is attributed to the following factors: (1) nearly half of the commercial forest acreage was classified as poor sites (site class 5), and (2) the average age of adequately stocked stands is 62 years--much older than average ages for the other regions. About 57 percent of the net growth was on oaks, 28 percent was on other hardwood species, and the remaining 15 percent was on yellow pine and other softwoods. By ownership class, 39 percent of the net growth occurred on publicly owned forests; over 2 percent on forest industry lands; 26 percent on farmer-owned lands; and the remaining 33 percent on commercial forests held by miscellaneous private owners. The net growth of all species included some 334 million board feet of sawtimber.

--removals of growing stock totaled nearly 33 million cubic feet, slightly more than one-third the net growth. Almost 21 percent of the volume removed was yellow pine and other softwoods, and the remaining 79 percent was hardwoods. The distribution of removals by ownership class differed from that of net growth. Over 46 percent of the removals came from publicly owned forests, 7 percent from forest industry lands, 20 percent from farmer-owned land, and the remaining 27 percent from miscellaneous private forests. The total removals of all species included 111 million board feet of sawtimber.

--mortality of growing stock totaled 14 million cubic feet and reduced gross growth by 13 percent. Hardwoods accounted for 63 percent of the mortality. Insects, weather, and suppression were the leading identifiable causes of death. Total mortality included 27 million board feet of sawtimber.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 11,011 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 925 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 576 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees in the Northern Mountain Region of Virginia, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at five active cutting operations. These data will be pooled with similar measurements taken in the State to supplement the standing tree-volume study and to generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 582 permanent sample plots which were established in the third survey.

6. Ownership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	0.66
Per billion cubic feet of growing stock	4.31
Per billion cubic feet of net annual growth	0.88
Per billion cubic feet of annual removals	2.91

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS, IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
ALLEGHANY	0.56	7.44	7.90	57.74
AUGUSTA	1.05	8.51	10.91	38.93
BATH	0.45	6.54	6.89	39.82
BOTETOURT	1.27	9.49	10.39	50.72
CLARKE	9.93	19.41	18.76	0.00
CRAIG	0.63	8.09	9.11	77.15
FREDERICK	3.19	10.29	12.07	89.37
HIGHLAND	1.22	10.32	10.17	46.52
PAGE	2.82	10.24	11.26	77.69
ROANOKE	3.72	15.39	12.78	59.84
ROCKBRIDGE	1.38	8.32	7.80	39.37
ROCKINGHAM	1.22	6.45	9.95	71.80
SHENANDOAH	1.59	7.79	11.32	58.40
WARREN	4.23	15.59	15.81	68.24
UNIT TOTAL	0.41	2.50	2.85	16.05

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.4	61.0	68.2	60.0
8	68.7	68.1	76.0	68.4
10	73.6	73.1	81.4	73.4
12	76.7	76.7	85.2	76.4
14	78.8	79.4	88.2	78.4
16	80.3	81.6	90.4	79.8
18	81.4	83.3	92.3	80.8
20	81.9	84.8	93.8	81.5
22	82.8	86.0	95.1	82.1
24+	83.7	87.9	97.3	83.0
AVERAGE	74.4	72.2	83.6	74.4

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1.--*AREA, BY LAND CLASS AND COUNTY, 1977*

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
ALLEGHANY	289,280	255,511	251,237	3,927	347	33,769
AUGUSTA	641,280	352,380	318,822	19,115	14,443	288,900
BATH	345,600	309,093	296,962	8,066	4,065	36,507
BOTETOURT	350,507	251,840	244,440	5,598	1,802	98,667
CLARKE	111,360	34,386	34,291	--	95	76,974
CRAIG	215,040	177,625	175,219	13	2,393	37,415
FREDERICK	279,040	144,055	143,151	796	108	134,985
HIGHLAND	266,240	196,394	195,717	677	--	69,846
PAGE	202,240	126,866	85,840	3,473	37,553	75,374
ROANOKE	193,920	114,748	114,165	--	583	79,172
ROCKBRIDGE	388,109	257,335	249,091	2,541	5,703	130,774
ROCKINGHAM	557,440	312,794	259,963	13,089	39,742	244,646
SHENANDOAH	324,480	193,432	185,560	7,872	--	131,048
WARREN	140,160	85,334	71,254	894	13,186	54,826
TOTAL	4,304,696	2,811,793	2,625,712	66,061	120,020	1,492,903

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 16,836 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1977*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
ALLEGHANY	251,237	134,713	1,030	450	258	8,188	22,208	13,325	71,065
AUGUSTA	318,822	168,392	--	8,104	100	--	54,701	16,411	71,114
BATH	296,962	157,712	2,800	9,486	62	320	46,413	29,533	50,636
BOTETOURT	244,440	70,830	--	--	6,327	29,484	55,981	30,143	51,675
CLARKE	34,291	--	--	90	189	758	9,501	4,750	19,003
CRAIG	175,219	112,166	--	--	--	--	33,951	--	29,102
FREDERICK	143,151	4,994	--	3	--	513	68,821	18,352	50,468
HIGHLAND	195,717	52,154	--	13,502	241	11,877	82,048	10,256	25,639
PAGE	85,840	24,594	--	--	35	--	25,204	3,601	32,406
ROANOKE	114,165	589	53	4,204	5,880	8,066	29,803	5,961	59,609
ROCKBRIDGE	249,091	54,773	--	15,449	5,754	12,711	68,054	14,582	77,768
ROCKINGHAM	259,963	120,626	--	227	75	645	39,540	24,712	74,138
SHENANDOAH	185,560	62,317	--	--	190	--	34,455	4,922	83,676
WARREN	71,254	4,591	1,575	93	--	--	37,914	16,249	10,832
TOTAL	2,625,712	968,451	5,458	51,608	19,111	72,562	608,594	192,797	707,131

TABLE 3.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1977*

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE-FIR	LONGLEAF-SLASH	LOBLOLLY-SHORTLEAF	OAK-PINE	OAK-HICKORY	OAK-GUM-CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
	ACRES									
ALLEGHANY	251,237	--	--	--	22,228	31,852	183,831	--	--	13,326
AUGUSTA	318,822	4,009	--	--	24,055	51,405	239,353	--	--	--
BATH	296,962	4,219	--	--	8,600	21,420	262,723	--	--	--
BOTETOURT	244,440	4,722	--	--	26,252	22,268	186,892	--	4,306	--
CLARKE	34,291	--	--	--	--	--	34,291	--	--	--
CRAIG	175,219	4,850	--	--	32,135	18,674	119,560	--	--	--
FREDERICK	143,151	4,588	--	--	9,176	13,767	115,620	--	--	--
HIGHLAND	195,717	--	--	--	4,346	29,691	156,552	--	--	5,128
PAGE	85,840	--	--	--	10,803	10,838	60,598	--	3,601	--
ROANOKE	114,165	11,922	--	--	18,471	11,922	71,850	--	--	--
ROCKBRIDGE	249,091	--	--	--	22,010	37,591	184,629	--	4,861	--
ROCKINGHAM	259,963	4,020	--	--	19,770	23,170	208,060	--	4,943	--
SHENANDOAH	185,560	4,923	--	--	19,689	22,096	133,930	--	4,922	--
WARREN	71,254	--	--	--	--	5,416	44,173	--	21,665	--
TOTAL	2,625,712	43,253	--	--	217,535	300,110	2,002,062	--	44,298	18,454

TABLE 4. --*AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1977*

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
			ACRES		
ALLEGHANY	251,237	102,914	116,472	31,851	--
AUGUSTA	318,822	128,473	126,539	39,380	24,430
BATH	296,962	86,967	167,154	42,841	--
BOTETOURT	244,440	104,299	92,318	43,101	4,722
CLARKE	34,291	24,033	10,258	--	--
CRAIG	175,219	78,453	82,943	9,337	4,486
FREDERICK	143,151	65,151	59,648	18,352	--
HIGHLAND	195,717	102,651	62,646	30,420	--
PAGE	85,840	48,514	26,523	10,803	--
ROANOKE	114,165	23,844	82,371	7,950	--
ROCKBRIDGE	249,091	125,004	79,341	44,746	--
ROCKINGHAM	259,963	172,173	75,728	4,020	8,042
SHENANDOAH	185,560	102,090	67,549	7,332	8,589
WARREN	71,254	27,082	38,756	--	5,416
TOTAL	2,625,712	1,191,648	1,088,246	290,133	55,685

TABLE 5. --*AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1977*

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
				ACRES		
ALLEGHANY	251,237	--	--	13,695	130,193	107,349
AUGUSTA	318,822	--	--	--	121,541	197,281
BATH	296,962	--	--	--	173,532	123,430
BOTETOURT	244,440	--	4,722	30,977	92,904	115,837
CLARKE	34,291	--	--	--	34,291	--
CRAIG	175,219	--	--	4,486	69,847	100,886
FREDERICK	143,151	--	--	--	83,504	59,647
HIGHLAND	195,717	--	--	14,602	68,910	112,205
PAGE	85,840	--	--	--	55,715	30,125
ROANOKE	114,165	--	--	5,961	53,646	54,558
ROCKBRIDGE	249,091	--	4,214	23,033	155,464	66,380
ROCKINGHAM	259,963	--	--	9,885	67,991	182,087
SHENANDOAH	185,560	--	--	--	107,014	78,546
WARREN	71,254	--	--	5,417	38,756	27,081
TOTAL	2,625,712	--	8,936	108,056	1,253,308	1,255,412

TABLE 6.--*AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING-STOCK TREES, BY COUNTY, 1977*

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
				ACRES		
ALLEGHANY	251,237	--	1,738	135,479	114,020	--
AUGUSTA	318,822	--	30,986	100,034	163,372	24,430
BATH	296,962	--	17,201	181,249	98,512	--
BOTETOURT	244,440	--	18,888	135,706	85,124	4,722
CLARKE	34,291	--	279	29,262	4,750	--
CRAIG	175,219	--	36,622	87,063	47,048	4,486
FREDERICK	143,151	--	13,765	101,858	27,528	--
HIGHLAND	195,717	5,128	5,128	120,866	64,595	--
PAGE	85,840	--	7,236	40,925	37,679	--
ROANOKE	114,165	--	--	59,607	54,558	--
ROCKBRIDGE	249,091	--	31,483	158,356	59,252	--
ROCKINGHAM	259,963	--	4,323	137,861	109,737	8,042
SHENANDOAH	185,560	--	30,685	87,325	58,961	8,589
WARREN	71,254	--	15,423	21,665	28,750	5,416
TOTAL	2,625,712	5,128	213,757	1,397,256	953,886	55,685

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.--*VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1977*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*[1]				
ALLEGHANY	683,327	96,995	31,931	108,573	445,828	249,567	36,643	7,748	27,987	177,189
AUGUSTA	797,719	258,781	44,659	42,816	451,463	310,119	76,016	11,368	15,844	206,891
BATH	925,384	91,264	44,279	62,801	727,040	349,387	30,771	11,255	30,893	276,468
BOTETOURT	882,316	112,653	46,547	233,093	490,023	288,674	39,515	13,986	59,964	175,209
CLARKE	157,183	1,617	1,255	69,120	85,191	49,588	358	580	18,727	29,923
CRAIG	596,681	190,914	34,749	25,342	345,676	222,121	60,118	9,772	9,862	142,369
FREDERICK	474,288	22,234	16,195	31,086	404,773	180,504	9,870	6,664	14,911	149,059
HIGHLAND	792,210	47,108	123,607	94,419	527,076	259,955	14,171	29,069	32,490	184,225
PAGE	217,226	43,557	8,916	24,950	139,803	86,323	17,657	2,398	7,109	59,159
ROANOKE	224,433	33,733	38,708	46,701	105,291	100,287	20,724	11,069	14,152	54,342
ROCKBRIDGE	897,298	69,213	63,908	115,181	648,996	303,244	26,334	17,288	35,187	224,435
ROCKINGHAM	797,882	62,117	45,180	72,319	618,266	276,860	19,030	16,188	26,369	215,273
SHENANDOAH	551,417	93,007	31,771	53,636	373,003	221,057	30,846	9,085	22,963	158,163
WARREN	175,224	10,825	2,234	50,273	111,892	79,492	4,656	866	15,637	58,333
TOTAL	8,172,588	1,134,018	533,939	1,030,310	5,474,321	2,977,178	386,709	147,336	332,095	2,111,038

[1]FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALLEGHANY	25,909	2,468	1,056	4,700	17,685	7,745	951	267	930	5,597
AUGUSTA	30,853	5,373	1,666	1,926	21,888	9,308	1,088	559	914	6,747
BATH	37,297	2,262	1,226	4,165	29,644	11,735	521	618	1,326	9,270
BOTETOURT	32,719	2,602	2,069	10,586	17,462	9,578	959	454	2,887	5,278
CLARKE	9,627	25	84	5,845	3,673	1,736	5	11	842	878
CRAIG	19,880	4,806	1,608	1,223	12,243	6,563	1,088	365	547	4,563
FREDERICK	21,298	731	1,336	2,196	17,035	6,860	372	277	1,368	4,843
HIGHLAND	32,386	1,079	4,723	3,921	22,663	7,691	271	1,042	888	5,490
PAGE	9,600	1,503	249	1,151	6,697	2,764	605	73	349	1,737
ROANOKE	11,413	1,511	1,717	3,025	5,160	3,418	726	355	623	1,714
ROCKBRIDGE	34,303	1,934	3,322	5,939	23,108	8,856	654	499	1,503	6,200
ROCKINGHAM	34,013	1,163	1,761	4,913	26,176	8,615	300	626	1,424	6,265
SHENANDOAH	23,987	2,075	1,293	4,786	15,833	6,787	638	306	1,360	4,483
WARREN	11,109	270	76	3,062	7,701	2,797	96	21	668	2,012
TOTAL	334,394	27,802	22,186	57,438	226,968	94,453	8,274	5,473	15,629	65,077

TABLE 9.--*ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
ALLEGHANY	3,939	518	1,143	--	2,278	2,190	203	171	155	1,661
AUGUSTA	15,875	1,091	1,155	--	13,629	5,659	1,212	183	--	4,264
BATH	9,160	1,702	--	497	6,961	3,387	556	--	132	2,699
BOTETOURT	5,997	2,997	--	702	2,298	1,324	620	--	169	535
CLARKE	--	--	--	--	--	--	--	--	--	--
CRAIG	1,780	958	--	--	822	590	431	--	--	159
FREDERICK	4,336	--	--	--	4,336	799	--	--	--	799
HIGHLAND	15,774	1,074	4,120	--	10,580	4,274	366	853	--	3,055
PAGE	2,486	--	--	--	2,486	597	--	--	--	597
ROANOKE	3,603	--	--	--	3,603	1,284	--	--	--	1,284
ROCKBRIDGE	23,722	902	956	2,847	19,017	6,180	406	163	585	5,026
ROCKINGHAM	7,207	--	3,809	--	3,398	1,727	--	722	--	1,005
SHENANDOAH	13,785	1,891	--	--	11,894	3,914	442	--	--	3,472
WARREN	3,200	615	--	2,585	--	978	495	--	483	--
TOTAL	110,864	11,748	11,183	6,631	81,302	32,903	4,731	2,092	1,524	24,556

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1977*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
			ACRES			
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	43,253	12,751	--	--	13,730	16,772
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	--	--	--	--	--	--
SHORTLEAF PINE	4,923	--	--	--	--	4,923
VIRGINIA PINE	106,739	17,857	--	4,094	38,388	46,400
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	70,750	39,188	3,863	--	4,922	22,777
TABLE-MOUNTAIN PINE	35,123	16,718	--	--	4,306	14,099
TOTAL	260,788	86,514	3,863	4,094	61,346	104,971
HARDWOOD TYPES:						
OAK-PINE	300,110	93,810	7,333	11,275	81,540	106,152
OAK-HICKORY	1,764,127	651,342	49,975	54,223	414,629	593,958
CHESTNUT OAK	237,935	136,785	15,006	2,970	3,601	79,573
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	--	--	--	--	--	--
ELM-ASH-COTTONWOOD	44,298	--	--	--	33,466	10,832
MAPLE-BEECH-BIRCH	18,454	--	--	--	14,012	4,442
TOTAL	2,364,924	881,937	72,314	68,468	547,248	794,957
ALL TYPES	2,625,712	968,451	76,177	72,562	608,594	899,928

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1977*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
			ACRES			
NATIONAL FOREST	968,451	--	102,651	477,682	359,183	28,935
OTHER PUBLIC	76,177	--	2,354	28,191	45,632	--
FOREST INDUSTRY	72,562	--	8,474	29,141	34,947	--
FARMER	608,594	5,128	48,620	348,171	190,319	16,356
MISC. PRIVATE	899,928	--	51,658	514,071	323,805	10,394
ALL OWNERSHIPS	2,625,712	5,128	213,757	1,397,256	953,886	55,685

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.--*VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1977*

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
			THOUSAND CUBIC FEET		
SAWTIMBER TREES:					
SAW-LOG PORTION	1,582,628	218,834	91,164	189,257	1,083,373
UPPER-STEM PORTION	319,707	41,683	17,365	38,763	221,896
TOTAL	1,902,335	260,517	108,529	228,020	1,305,269
POLETIMBER TREES	1,074,843	126,192	38,807	104,075	805,769
ALL GROWING-STOCK TREES	2,977,178	386,709	147,336	332,095	2,111,038
ROUGH TREES:					
SAWTIMBER-SIZE TREES	402,174	20,101	3,944	34,360	343,769
POLETIMBER-SIZE TREES	394,889	26,677	3,348	56,532	308,332
TOTAL	797,063	46,778	7,292	90,892	652,101
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	125,410	513	1,075	14,861	108,961
POLETIMBER-SIZE TREES	16,131	379	--	3,603	12,149
TOTAL	141,541	892	1,075	18,464	121,110
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	3,666	1,528	108	--	2,030
POLETIMBER-SIZE TREES	4,892	1,506	226	121	3,039
TOTAL	8,558	3,034	334	121	5,069
TOTAL, ALL TIMBER	3,924,340	437,413	156,037	441,572	2,889,318

TABLE 13.--*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	1,520	441	402	273	232	55	91	18	8	--	--
LOBLOLLY PINE	--	--	--	--	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	21,035	10,061	6,605	2,765	1,203	354	38	9	--	--	--
PITCH PINE	17,776	4,135	4,633	4,162	2,733	1,326	521	204	30	32	--
TABLE-MOUNTAIN PINE	7,647	3,078	1,879	1,465	679	424	76	31	15	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	10,155	3,829	2,789	1,571	636	488	447	191	57	140	7
EASTERN HEMLOCK	3,877	1,734	719	554	287	288	95	77	49	62	12
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	2,080	1,111	708	190	71	--	--	--	--	--	--
TOTAL SOFTWOODS	64,090	24,389	17,735	10,980	5,841	2,935	1,268	530	159	234	19
HARDWOOD:											
SELECT WHITE OAKS	31,654	11,461	7,789	4,840	2,584	2,034	1,377	689	425	428	27
SELECT RED OAKS	15,893	4,230	3,558	2,508	1,920	1,256	876	487	383	607	68
CHESTNUT OAK	53,225	20,050	12,981	7,840	4,303	2,990	2,219	1,217	704	869	52
OTHER WHITE OAKS	361	244	44	--	42	--	22	9	--	--	--
OTHER RED OAKS	54,980	19,492	14,441	10,314	5,247	2,737	1,525	599	329	284	12
HICKORY	19,092	9,171	4,216	2,446	1,428	874	451	310	135	53	8
YELLOW BIRCH	116	--	87	29	--	--	--	--	--	--	--
HARD MAPLE	3,313	1,191	582	621	453	160	111	77	62	51	5
SOFT MAPLE	9,823	5,267	2,218	1,019	732	262	191	46	32	56	--
BEECH	403	271	--	28	42	15	25	10	--	12	--
SWEETGUM	--	--	--	--	--	--	--	--	--	--	--
TUPELO AND BLACKGUM	3,000	1,598	688	260	166	109	103	48	17	11	--
ASH	2,032	572	517	184	299	168	191	40	39	12	10
COTTONWOOD	113	71	--	--	--	--	23	--	--	19	--
BASSWOOD	1,152	278	140	126	198	202	135	30	9	34	--
YELLOW-POPLAR	9,531	2,398	1,736	1,651	1,246	976	717	379	182	233	13
BAY AND MAGNOLIA	654	164	145	166	143	--	12	19	--	5	--
BLACK CHERRY	675	303	128	36	71	103	12	22	--	--	--
BLACK WALNUT	1,718	811	405	113	179	103	66	11	25	5	--
SYCAMORE	648	--	102	97	178	91	48	57	22	53	--
BLACK LOCUST	4,006	1,492	1,168	726	305	197	60	41	17	--	--
ELM	844	120	505	59	48	16	72	8	16	--	--
OTHER EASTERN HARDWOODS	4,361	1,771	1,243	681	289	149	127	60	24	17	--
TOTAL HARDWOODS	217,594	80,955	52,693	33,744	19,873	12,442	8,363	4,159	2,421	2,749	195
ALL SPECIES	281,684	105,344	70,428	44,724	25,714	15,377	9,631	4,689	2,580	2,983	214

TABLE 14. VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
		THOUSAND CUBIC FEET									
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	17,475	1,491	1,586	3,186	4,017	1,682	1,701	899	415	--	--
LOBLOLLY PINE	--	--	--	--	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	151,283	33,034	48,940	34,628	21,980	9,521	1,781	399	--	--	--
PITCH PINE	196,334	14,326	29,159	44,452	46,323	31,617	18,921	9,156	1,680	2,550	--
TABLE-MOUNTAIN PINE	69,236	10,524	12,188	19,175	12,629	8,387	1,461	1,612	760	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	102,193	9,837	16,176	15,810	11,371	11,578	13,507	8,777	3,005	11,397	935
EASTERN HEMLOCK	42,503	5,071	3,798	5,647	3,551	5,410	3,441	3,521	2,851	5,702	2,501
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	11,007	3,198	4,275	1,751	1,548	235	--	--	--	--	--
TOTAL SOFTWOODS	590,082	76,281	119,133	124,648	101,419	70,430	41,912	24,364	8,721	19,749	3,436
HARDWOOD:											
SELECT WHITE OAKS	443,216	38,586	56,543	60,674	55,026	58,136	53,405	38,947	30,623	47,468	9,718
SELECT RED OAKS	338,035	26,156	30,229	32,811	39,078	35,482	36,948	25,987	25,392	64,531	20,423
CHESTNUT OAK	969,923	91,050	121,783	133,403	115,531	119,579	108,889	83,424	65,235	110,249	20,680
OTHER WHITE OAKS	4,443	1,189	394	--	553	340	1,112	483	372	--	--
OTHER RED OAKS	610,444	74,228	102,206	118,682	100,908	73,708	58,668	29,538	20,435	28,401	3,590
HICKORY	198,633	27,898	28,934	29,513	29,456	26,644	20,924	17,259	10,106	6,951	1,348
YELLOW BIRCH	1,358	--	735	623	--	--	--	--	--	--	--
HARD MAPLE	59,000	5,854	5,127	8,600	8,779	5,582	4,578	5,744	4,954	7,964	1,818
SOFT MAPLE	125,256	26,543	24,715	22,933	16,710	10,727	9,040	2,772	3,076	6,147	543
BEECH	6,386	803	272	407	1,301	486	968	862	232	1,055	--
SWEETGUM	--	--	--	--	--	--	--	--	--	--	--
TUPELO AND BLACKGUM	47,571	7,578	6,707	5,842	8,430	5,054	6,403	3,344	916	3,297	--
ASH	43,584	4,064	4,716	4,839	6,402	5,458	9,659	2,563	2,909	1,485	1,492
COTTONWOOD	3,046	399	--	--	--	--	975	--	384	1,288	--
BASSWOOD	27,780	1,793	1,601	1,741	5,219	5,638	6,289	1,510	426	3,623	--
YELLOW-POPLAR	176,851	8,267	11,264	20,491	24,679	28,129	28,535	19,916	11,446	21,004	2,520
BAY AND MAGNOLIA	8,400	464	875	1,909	2,453	354	594	1,161	--	1,090	--
BLACK CHERRY	13,056	2,651	1,898	1,064	2,185	1,307	847	1,084	--	--	--
BLACK WALNUT	29,576	4,624	5,004	3,356	6,303	4,033	2,129	1,003	1,664	1,400	--
SYCAMORE	19,581	--	946	3,329	2,843	2,555	1,382	2,379	1,316	4,486	335
BLACK LOCUST	79,988	10,189	15,579	19,671	12,455	9,161	4,530	4,581	1,963	1,863	--
ELM	13,778	1,030	4,304	1,837	1,537	419	2,119	377	860	695	--
OTHER EASTERN HARDWOODS	105,895	25,650	21,080	16,871	11,855	8,592	10,186	5,519	2,240	2,152	750
TOTAL HARDWOODS	3,325,700	361,952	449,912	488,596	451,803	403,601	368,269	248,453	184,549	315,149	63,417
ALL SPECIES	3,915,782	438,233	569,034	613,244	553,222	474,031	410,180	272,817	193,270	334,898	66,853

TABLE 15. - VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	16,566	1,136	2,354	3,185	4,017	1,359	3,201	899	415	--	--
LOBLOLLY PINE	--	--	--	--	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	126,118	26,514	39,941	30,090	19,459	8,570	1,145	399	--	--	--
PITCH PINE	181,348	9,343	25,362	41,310	43,768	30,693	17,699	8,843	1,680	2,650	--
TABLE-MOUNTAIN PINE	62,677	10,003	11,539	17,162	11,138	8,798	1,961	1,316	760	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	97,887	8,607	15,968	15,142	10,144	11,278	13,507	8,414	3,005	10,887	935
EASTERN HEMLOCK	40,786	4,387	3,798	4,887	3,551	6,410	3,441	3,521	2,861	5,429	2,501
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	8,663	2,357	3,690	1,751	865	--	--	--	--	--	--
TOTAL SOFTWOODS	534,145	62,347	102,652	113,527	92,942	67,108	40,954	23,392	8,721	18,966	3,436
HARDWOOD:											
SELECT WHITE OAKS	382,722	31,783	47,009	52,326	46,343	51,758	49,754	33,562	25,881	39,513	4,793
SELECT RED OAKS	270,044	14,638	23,607	27,511	33,258	31,142	31,583	22,911	22,597	50,585	12,212
CHESTNUT OAK	579,071	56,427	74,528	79,499	67,588	68,877	68,372	50,203	37,440	67,027	9,110
OTHER WHITE OAKS	2,893	828	160	--	553	--	869	483	--	--	--
OTHER RED OAKS	536,396	58,231	88,157	109,803	89,000	66,426	53,175	27,330	19,204	22,806	2,264
HICKORY	169,112	23,805	22,395	25,093	25,223	23,340	17,140	16,033	9,049	5,486	1,548
YELLOW BIRCH	1,055	--	735	320	--	--	--	--	--	--	--
HARD MAPLE	47,119	4,298	3,799	7,124	8,457	4,324	4,223	3,860	4,441	5,548	1,045
SOFT MAPLE	76,850	16,521	14,155	12,132	12,898	6,743	6,691	2,019	1,881	3,810	--
BEECH	5,208	803	--	407	960	486	968	529	--	1,055	--
SWEETGUM	--	--	--	--	--	--	--	--	--	--	--
TUPELO AND BLACKGUM	21,586	3,176	3,638	2,607	2,784	2,528	2,997	1,959	745	1,052	--
ASH	31,366	1,806	3,400	2,157	5,305	4,369	7,457	2,064	2,316	1,000	1,492
COTTONWOOD	2,662	399	--	--	--	--	975	--	--	1,288	--
BASSWOOD	23,601	855	1,049	1,741	4,091	5,241	5,751	1,275	426	3,172	--
YELLOW-POPLAR	164,815	6,824	10,713	18,814	22,778	26,262	27,158	19,096	11,171	19,912	2,087
BAY AND MAGNOLIA	2,596	464	875	1,623	2,453	--	594	1,161	--	426	--
BLACK CHERRY	7,297	679	612	345	1,506	2,587	489	1,084	--	--	--
BLACK WALNUT	15,831	2,293	2,555	1,511	3,126	2,021	2,129	240	1,302	654	--
SYCAMORE	16,177	--	662	1,325	2,843	2,205	1,382	2,379	1,316	4,065	--
BLACK LOCUST	32,365	3,571	6,406	7,369	5,192	4,775	2,570	1,571	911	--	--
ELM	9,340	238	3,145	847	735	419	2,719	377	860	--	--
OTHER EASTERN HARDWOODS	40,027	5,759	8,472	7,820	5,207	3,344	4,163	2,593	1,163	1,506	--
TOTAL HARDWOODS	2,443,133	233,398	316,072	360,374	340,300	306,942	291,159	190,729	140,703	228,905	34,551
ALL SPECIES	2,977,278	295,745	418,724	473,901	433,242	374,050	332,113	214,121	149,424	247,871	37,987

TABLE 16.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	63,193	12,021	18,469	6,881	17,966	5,313	2,543	--	--
LOBLOLLY PINE	--	--	--	--	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	231,980	105,227	79,836	39,301	5,568	2,048	--	--	--
PITCH PINE	650,591	137,151	185,268	151,800	97,047	51,437	10,457	17,431	--
TABLE-MOUNTAIN PINE	188,254	68,195	51,502	45,180	10,981	7,686	4,710	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	359,819	53,835	44,343	54,736	70,600	46,432	17,344	66,453	6,076
EASTERN HEMLOCK	162,920	16,315	14,467	30,059	17,783	19,118	16,190	32,633	16,355
SPRUCE AND FIR	--	--	--	--	--	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	11,200	7,166	4,034	--	--	--	--	--	--
TOTAL SOFTWOODS	1,667,957	399,910	397,919	327,957	219,945	132,034	51,244	116,517	22,431
HARDWOOD:									
SELECT WHITE OAKS	1,087,046	--	152,052	198,975	214,755	155,309	127,476	210,330	28,149
SELECT RED OAKS	866,641	--	106,573	115,080	128,617	99,608	103,480	247,645	65,638
CHESTNUT OAK	1,550,441	--	213,400	255,939	283,674	225,028	177,280	343,140	51,980
OTHER WHITE OAKS	8,748	--	2,097	--	4,157	2,494	--	--	--
OTHER RED OAKS	1,131,253	--	290,018	254,743	230,374	127,089	94,777	120,831	13,421
HICKORY	422,461	--	85,111	93,458	78,163	78,629	47,025	30,669	9,406
YELLOW BIRCH	--	--	--	--	--	--	--	--	--
HARD MAPLE	138,485	--	30,985	17,567	18,262	17,541	20,836	27,742	5,552
SOFT MAPLE	130,353	--	40,333	25,000	27,644	9,205	8,890	19,281	--
BEECH	15,659	--	3,552	1,875	3,793	2,099	--	4,340	--
SWEETGUM	--	--	--	--	--	--	--	--	--
TUPELO AND BLACKGUM	48,767	--	8,490	9,987	12,333	8,904	3,517	5,536	--
[illegible]	[illegible],746	--	17,203	16,734	31,767	9,560	11,376	5,487	8,599
COTTONWOOD	11,061	--	--	--	4,248	--	--	6,813	--
BASSWOOD	83,159	--	14,154	20,311	24,637	5,810	2,017	16,230	--
YELLOW-POPLAR	623,410	--	80,355	112,482	131,947	100,420	63,149	120,930	14,127
BAY AND MAGNOLIA	22,145	--	8,691	--	3,282	7,006	--	3,166	--
BLACK CHERRY	22,562	--	5,317	10,151	2,152	4,942	--	--	--
BLACK WALNUT	33,186	--	10,818	7,046	7,487	849	4,638	2,348	--
SYCAMORE	62,340	--	8,782	7,978	5,905	11,110	6,623	21,942	--
BLACK LOCUST	54,718	--	18,369	17,328	9,605	5,921	3,495	--	--
ELM	21,485	--	2,375	1,663	11,592	1,748	4,107	--	--
OTHER EASTERN HARDWOODS	69,965	--	17,370	12,708	16,506	11,171	5,148	7,062	--
TOTAL HARDWOODS	6,504,631	--	1,116,045	1,179,025	1,250,920	884,443	683,834	1,193,492	196,872
ALL SPECIES	8,172,588	399,910	1,513,964	1,506,982	1,470,865	1,016,477	735,078	1,310,009	219,303

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1976*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - *THOUSAND CUBIC FEET* - -	
SOFTWOOD:		
YELLOW PINES	8,274	4,731
EASTERN WHITE PINE	4,237	1,909
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	1,236	183
TOTAL SOFTWOODS	13,747	6,823
HARDWOOD:		
SELECT WHITE AND RED OAKS	21,892	8,941
OTHER WHITE AND RED OAKS	32,143	12,259
HICKORY	4,776	3,019
YELLOW BIRCH	20	--
HARD MAPLE	1,384	--
SWEETGUM	--	--
ASH,WALNUT, AND BLACK CHERRY	2,169	337
YELLOW-POPLAR	8,463	986
TUPELO AND BLACKGUM	729	538
BAY AND MAGNOLIA	136	--
OTHER EASTERN HARDWOODS	8,994	--
TOTAL HARDWOODS	80,706	26,080
ALL SPECIES	94,453	32,903

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1976*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - *THOUSAND BOARD FEET* - - -	
SOFTWOOD:		
YELLOW PINES	27,802	11,748
EASTERN WHITE PINE	16,662	10,028
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	5,524	1,155
TOTAL SOFTWOODS	49,988	22,931
HARDWOOD:		
SELECT WHITE AND RED OAKS	76,114	34,095
OTHER WHITE AND RED OAKS	116,560	32,993
HICKORY	15,206	12,750
YELLOW BIRCH	65	--
HARD MAPLE	5,581	--
SWEETGUM	--	--
ASH,WALNUT, AND BLACK CHERRY	7,977	1,464
YELLOW-POPLAR	36,335	4,234
TUPELO AND BLACKGUM	2,527	2,397
BAY AND MAGNOLIA	450	--
OTHER EASTERN HARDWOODS	23,591	--
TOTAL HARDWOODS	284,406	87,933
ALL SPECIES	334,394	110,864

TABLE 19.--*MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1976*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	*THOUSAND BOARD FEET*
SOFTWOOD:		
YELLOW PINES	4,801	10,505
EASTERN WHITE PINE	438	1,016
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	90	--
TOTAL SOFTWOODS	5,329	11,521
HARDWOOD:		
SELECT WHITE AND RED OAKS	2,163	4,340
OTHER WHITE AND RED OAKS	5,497	8,655
HICKORY	408	1,538
YELLOW BIRCH	--	--
HARD MAPLE	--	--
SWEETGUM	--	--
ASH, WALNUT, AND BLACK CHERRY	131	--
YELLOW-POPLAR	--	--
TUPELO AND BLACKGUM	--	--
BAY AND MAGNOLIA	--	--
OTHER EASTERN HARDWOODS	858	681
TOTAL HARDWOODS	9,057	15,214
ALL SPECIES	14,386	26,735

TABLE 20.--*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1977*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	1,584,929	196,355	44,483	125,431	1,218,660	1,171,633	183,981	42,913	93,914	850,825
OTHER PUBLIC	109,583	6,611	5,943	14,040	82,989	70,615	4,845	5,943	8,049	51,778
FOREST INDUSTRY	102,491	10,081	4,671	13,395	74,344	80,561	9,319	4,671	10,621	55,950
FARMER	921,756	75,290	62,259	135,418	648,789	732,357	63,234	57,203	101,732	510,188
MISCELLANEOUS PRIVATE	1,197,023	146,042	38,347	153,167	859,467	922,012	125,330	36,606	117,779	642,297
ALL OWNERSHIPS	3,915,782	434,379	155,703	441,451	2,884,249	2,977,178	386,709	147,336	332,095	2,111,038

TABLE 21.--*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1977*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	1,310,592	484,129	60,227	96,148	670,088	2,046,179	140,779	99,632	210,119	1,595,649
OTHER PUBLIC	70,509	13,232	10,333	6,548	40,396	97,541	--	10,271	5,626	81,644
FOREST INDUSTRY	99,027	19,201	7,690	15,391	56,745	139,585	10,315	13,173	20,105	95,992
FARMER	845,473	137,000	89,680	117,793	501,000	1,211,896	14,258	116,063	218,385	863,190
MISCELLANEOUS PRIVATE	1,095,255	247,269	57,025	122,140	668,821	1,256,531	67,835	69,845	218,055	900,796
ALL OWNERSHIPS	3,420,856	900,831	224,955	358,020	1,937,050	4,751,732	233,187	308,984	672,290	3,537,271

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	34,124	3,194	1,800	3,902	25,228	15,106	2,776	1,727	324	10,279
OTHER PUBLIC	2,585	96	433	233	1,823	193	193	--	--	--
FOREST INDUSTRY	2,423	197	152	359	1,715	2,297	83	--	216	1,958
FARMER	24,364	1,823	1,703	5,039	15,799	6,551	291	365	680	5,215
MISCELLANEOUS PRIVATE	30,957	2,964	1,385	6,096	20,512	8,796	1,388	--	304	7,104
ALL OWNERSHIPS	94,453	8,274	5,473	15,629	65,077	32,903	4,731	2,092	1,524	24,556

TABLE 23.--NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	122,996	13,479	7,078	16,695	85,744	43,305	6,186	8,924	702	27,493
OTHER PUBLIC	7,160	232	1,142	682	5,104	1,008	1,008	--	--	--
FOREST INDUSTRY	9,961	507	1,280	1,973	6,201	7,818	--	--	1,152	6,666
FARMER	87,936	4,584	8,030	16,300	59,022	30,423	1,290	2,259	3,464	23,410
MISCELLANEOUS PRIVATE	106,341	9,000	4,656	21,788	70,897	28,310	3,264	--	1,313	23,733
ALL OWNERSHIPS	334,394	27,802	22,186	57,438	226,968	110,864	11,748	11,183	6,631	81,302

TABLE 24.--AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1977

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,769	745	2,726	973	713	374	--	109	1,116	550	1,425	702
HARDWOOD	187	169	70	141	--	106	--	79	378	199	197	184
TOTAL	1,956	914	2,796	1,114	713	480	--	188	1,494	749	1,622	886
OTHER TIMBER:												
SOFTWOOD	--	86	--	49	--	215	--	34	--	94	--	111
HARDWOOD	-	136	--	117	--	307	--	--	--	115	--	163
TOTAL	--	222	--	166	--	522	--	34	--	209	--	274
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,603	480	1,937	523	2,263	679	1,255	416	1,583	508	1,273	405
HARDWOOD	970	489	617	405	1,929	864	196	365	1,693	643	774	437
TOTAL	2,573	969	2,554	928	4,192	1,543	1,451	781	3,276	1,151	2,047	842
OTHER TIMBER:												
SOFTWOOD	--	35	--	11	--	--	--	23	--	60	--	43
HARDWOOD	--	248	--	258	--	619	--	221	--	177	--	263
TOTAL	--	283	--	269	--	619	--	244	--	237	--	306
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	356	96	417	105	146	42	515	121	404	116	256	75
HARDWOOD	2,987	1,096	3,046	1,085	1,723	760	2,875	949	3,465	1,255	2,752	1,059
TOTAL	3,343	1,192	3,463	1,190	1,869	802	3,390	1,070	3,869	1,371	3,008	1,134
OTHER TIMBER:												
SOFTWOOD	--	11	--	10	--	11	--	5	--	16	--	10
HARDWOOD	--	374	--	442	--	445	--	281	--	337	--	315
TOTAL	--	385	--	452	--	456	--	286	--	353	--	325
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	30	20	--	-	--	--	--	--	--	9	124	55
HARDWOOD	3,093	895	--	--	--	--	--	--	3,636	1,008	1,381	538
TOTAL	3,123	915	--	--	--	-	-	--	3,636	1,017	1,505	593
OTHER TIMBER:												
SOFTWOOD	--	9	--	--	--	--	--	--	--	6	--	19
HARDWOOD	--	380	--	--	--	--	--	--	--	391	--	347
TOTAL	--	389	--	--	--	--	--	--	--	397	--	366
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	635	203	775	224	415	132	608	169	613	207	510	187
HARDWOOD	2,477	931	2,539	933	1,647	734	2,272	804	2,920	1,051	2,205	878
TOTAL	3,112	1,134	3,314	1,157	2,062	866	2,880	973	3,533	1,258	2,715	1,065
OTHER TIMBER:												
SOFTWOOD	--	21	--	14	--	22	--	9	--	29	--	26
HARDWOOD	--	336	--	394	--	456	--	256	--	296	--	292
TOTAL	--	357	--	408	--	478	--	265	--	325	--	318
ALL TIMBER	3,112	1,491	3,314	1,565	2,062	1,344	2,880	1,238	3,533	1,583	2,715	1,383

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1957, 1966, AND 1977*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE 1966-1977
	1957	1966	1977	
	ACRES			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	657,200	555,079	560,898	+ 5,819
HARDWOOD TYPES	1,740,800	1,948,231	2,064,814	+116,583
TOTAL	2,398,000	2,503,310	2,625,712	+122,402
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	103,400	128,100	120,020	- 8,080
UNPRODUCTIVE	275,200	180,997	66,061	-114,936
TOTAL	378,600	309,097	186,081	-123,016
NONFOREST LAND:				
CROPLAND	565,400	369,482	341,294	- 28,188
PASTURE AND RANGE	837,000	874,185	878,334	+ 4,149
OTHER	118,800	245,393	256,439	+ 11,046
TOTAL	1,521,200	1,489,060	1,476,067	- 12,993
ALL LAND[1]	4,297,800	4,301,467	4,287,860	- 13,607

[1] EXCLUDES ALL WATER AREAS.

TABLE 26. --*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
SAWTIMBER (IN THOUSAND BOARD FEET)											
SOFTWOOD	1957	1,041,939	--	--	265,814	250,785	162,659	129,071	58,297	58,337	116,976
	1966	1,162,794	--	--	305,155	279,528	205,112	137,917	87,691	49,635	97,756
	1977	1,667,957	--	--	399,910	397,919	327,957	219,945	132,034	51,244	138,948
HARDWOOD	1957	4,105,928	--	--	--	756,893	820,883	696,923	669,008	410,417	751,804
	1966	4,841,200	--	--	--	824,671	907,682	831,104	694,099	503,632	1,080,012
	1977	6,504,631	--	--	--	1,116,045	1,179,025	1,250,920	884,443	683,834	1,390,364
GROWING STOCK (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	365,777	50,801	84,511	75,451	58,581	33,284	24,031	10,329	9,928	18,861
	1966	408,251	62,139	86,804	86,618	65,295	41,971	25,678	15,537	8,447	15,762
	1977	534,045	62,347	102,652	113,527	92,942	67,108	40,954	23,392	8,721	22,402
HARDWOOD	1957	1,632,026	171,576	236,820	245,736	230,760	213,716	162,226	144,276	84,448	142,468
	1966	1,907,653	215,243	274,068	279,165	251,424	236,314	193,460	149,687	103,628	204,664
	1977	2,443,133	233,398	316,072	360,374	340,300	306,942	291,159	190,729	140,703	263,456
ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	406,378	61,948	97,951	82,874	63,919	34,940	24,575	10,764	9,928	19,479
	1966	453,990	75,775	100,607	95,137	71,246	44,047	26,273	16,168	8,447	16,290
	1977	590,082	76,281	119,122	124,648	101,419	70,430	41,912	24,364	8,721	23,185
HARDWOOD	1957	2,224,898	265,971	329,791	333,208	306,377	280,943	205,184	187,920	110,781	204,723
	1966	2,607,881	333,659	381,665	378,528	333,796	310,675	244,652	194,977	135,886	294,043
	1977	3,325,700	361,952	439,912	488,596	451,803	403,601	368,268	248,453	184,549	378,566

[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Sheffield, Raymond M.
1977. Forest statistics for the Northern Mountain Region of Virginia, 1977. USDA For. Serv. Resour. Bull. SE-41, 33 p. Southeast. For. Exp. Stn., Asheville, N. C.

Since 1966, the area of commercial forest land in this 14-county area has increased by 5 percent as a result of reclassification of former noncommercial forest land. National Forests and other public agencies are the largest owner group in this region. Volume of hardwood and softwood growing stock has increased by 28 and 31 percent, respectively. Hardwoods make up 82 percent of the inventory. Net annual growth of growing stock averaged 36 cubic feet per acre of commercial forest, 187 percent more than annual timber removals.

Keywords: Forest trends, commercial forest land, forest ownership, timber volume, timber growth, timber removals.

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Forest Service - U.S. Department of Agriculture
Southeastern Forest Experiment Station
Asheville, North Carolina

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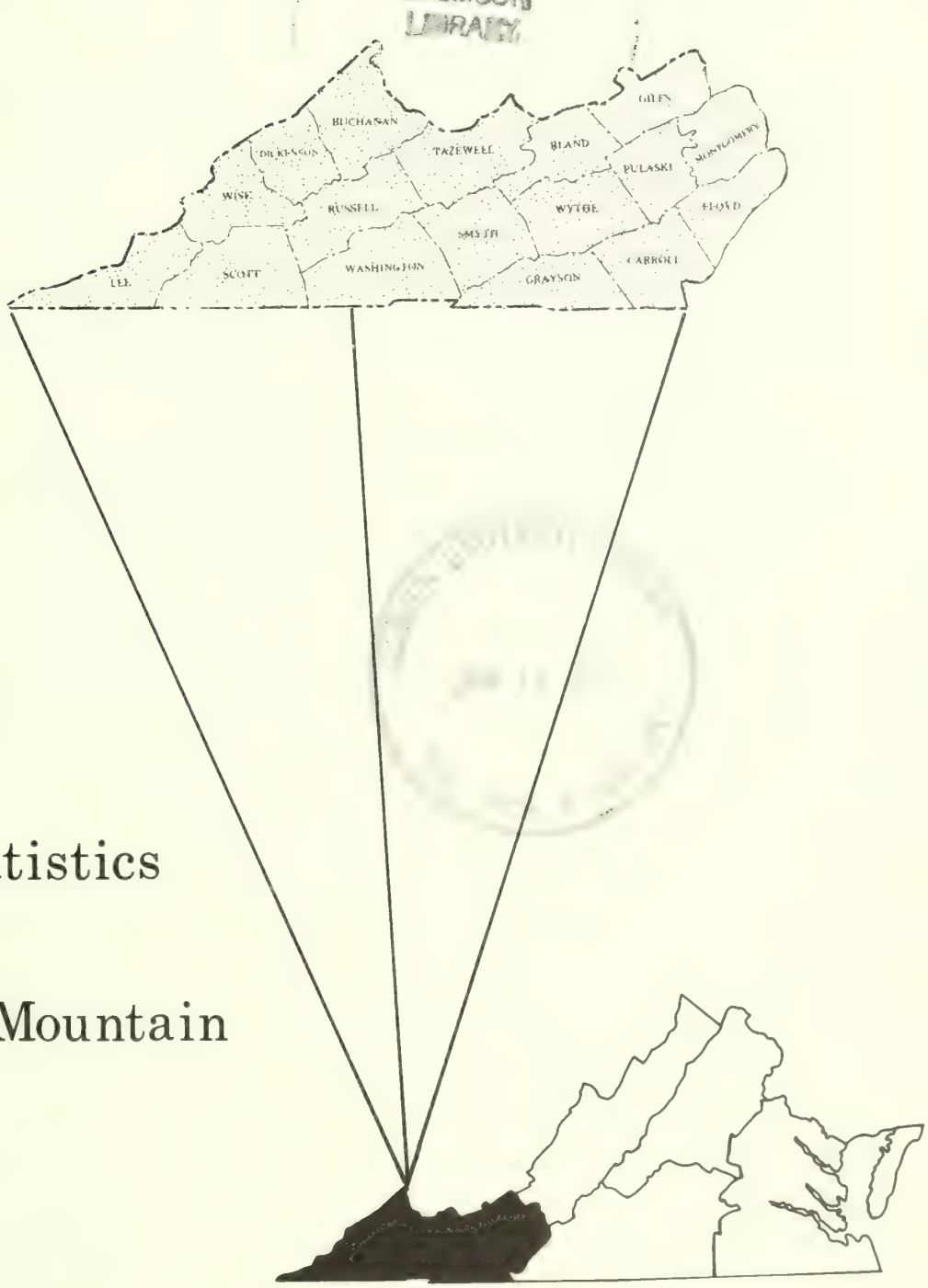

Forest Statistics for the Southern Mountain Region of Virginia 1977

FOREWORD

This report highlights the principal findings of the fourth inventory of the timber resource in the Southern Mountain Region of Virginia. The inventory was started in December 1976 and completed in March 1977. Three previous inventories, completed in 1940, 1957, and 1966, provide statistics for measuring changes and trends over the past 37 years. In this report, the primary emphasis is on the changes and trends since 1966. Previously reported figures have been adjusted to provide the best estimate of real change.

Forest Survey, now Renewable Resources Evaluation, authorized by the McSweeney-McNary Forest Research Act of 1928, as amended, and by the Forest and Rangeland Renewable Resources Planning Act of 1974, is a continuing, nationwide undertaking by the regional experiment stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, Renewable Resources Evaluation is administered through the Southeastern Forest Experiment Station, with headquarters at Asheville, North Carolina. The objective of the statewide timber inventories is to periodically measure and evaluate the timber resource. These inventories provide information on the extent and condition of the forest lands, volume of timber, and rates of timber growth and removals. These data and evaluations help provide a basis for the formulation of forest policies and programs and the orderly development and use of the resource.

The 17-county area covered by this report is one of five survey units in Virginia. Similar reports, USDA Forest Service Resource Bulletins SE-34, 35, 39, and 41, have been issued for the Coastal Plain, Southern Piedmont, Northern Piedmont, and the Northern Mountain Region, along with an interim summary of some of the State totals. A final State report will present an in-depth analysis of the findings and should be available early in 1978.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Virginia Division of Forestry. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and private landowners in providing information and access to the sample locations.

Joe P. McClure

JOE P. McCLURE
Project Leader

Forest Statistics
for the
Southern Mountain Region of Virginia
1977

by
Raymond M. Sheffield, Associate Resource Analyst

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HIGHLIGHTS

Since 1966 in the Southern Mountain Region of Virginia--

--area of commercial forest land has increased by 20,000 acres, or less than 1 percent. This increase is entirely attributable to the reclassification of nearly 17,000 acres of noncommercial forest land on the Jefferson National Forest to commercial forest land. Altogether, more than 96,000 acres were added to commercial forests, while only 76,000 acres of commercial forests were diverted to other land uses. Urban land uses accounted for 51 percent of the diversions; agricultural uses accounted for nearly 40 percent. Commercial forest land now occupies 3.0 million acres, or 63 percent of the total land in this 17-county area.

--area of commercial forest land owned by public agencies has increased by 92,000 acres, or by 25 percent. The previously mentioned land reclassification on the Jefferson National Forest accounted for 18 percent of this increase. This National Forest makes up almost nine-tenths of all publicly owned forest land. The smallest changes in ownership acreages occurred in the miscellaneous private and farmer categories: miscellaneous private holdings increased by 33,000 acres, while farmer-owned woodlands declined by only 16,000 acres. Commercial forest land owned by forest industry declined by 87,000 acres and now totals only 60,000 acres. This decline was caused by the shift of one large landowner out of the forest industry category.

--nearly 8 out of every 10 acres now classified as commercial forest showed no evidence of treatment or major disturbance. As in other mountainous regions, the rugged terrain and high percentage of hardwood forests contributed to this low level of forestry activity. Harvesting has taken place on 120,000 acres; over 259,000 acres experienced some form of intermediate cutting. Grazing and other disturbances occurred on 187,000 acres. An additional 96,000 acres have experienced significant natural disturbance by insects, disease, fire, weather, or other natural destructive agents.

--average basal area of all live trees 5.0 inches d.b.h. and larger has increased from 59 to 75 square feet per acre of commercial forest. There are also 533 saplings per acre, 100 fewer than in 1966. Despite the increase in basal-area stocking, 958,000 acres were classified either as nonstocked or poorly stocked with growing-stock trees. Trees which fail to qualify as growing stock because of roughness, rot, poor form, or species make up over 26 percent of the basal-area stocking.

--volume of softwood growing stock has increased from 0.3 to nearly 0.5 billion cubic feet, or by 51 percent. White pine and Virginia pine, the leading softwood species, accounted for over 84 percent of the increase. Shortleaf pine recorded the only substantial decline in volume, dropping by more than 38 percent. The softwood-volume increase occurred across all diameter classes. The current inventory of softwood growing stock includes nearly 1.6 billion board feet of sawtimber, 73 percent more than in 1966.

--volume of hardwood growing stock has increased from 2.3 to 3.2 billion cubic feet, or by 36 percent. Yellow-poplar and the oaks accounted for 72 percent of the gain; yellow-poplar has surpassed chestnut oak as the most abundant hardwood species in the area. Substantial gains in hardwood growing-stock volume were recorded for all diameter classes. The current inventory of hardwood growing stock includes 8.1 billion board feet of sawtimber, up by 39 percent.

In 1976--

--net growth of growing stock averaged 44 cubic feet per acre of commercial forest and totaled 132 million cubic feet. Net growth of hardwoods accounted for 87 percent of the total net growth and exceeded removals by 213 percent. Net growth of softwoods exceeded removals by 293 percent. The net growth of all species included 452 million board feet of sawtimber.

--removals of growing stock totaled 41 million cubic feet. Both hardwood and softwood removals were down in comparison with the previous survey. Hardwoods accounted for 89 percent of the growing-stock removals. Over 28 percent of the growing-stock removals were not used for products. Removals of all species included 150 million board feet of sawtimber.

--mortality of growing stock totaled 17 million cubic feet and reduced gross growth by 12 percent. Over 83 percent of the mortality was hardwood. Insects were the leading identifiable cause of death for softwood species, while weather and suppression were the major causes of death for hardwood species. Total mortality included 37 million board feet of sawtimber.

HOW THE FOREST SURVEY IS MADE

The method of survey is essentially a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until the total is large enough to meet the desired degree of reliability. The basic steps of the survey procedure were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 14,909 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 867 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were based on measurements recorded at 568 ground sample locations systematically distributed within the commercial forest land. A 10-point cluster of plots, measured with a basal area factor of 37.5 square feet per acre, was systematically spaced on an acre at each of these sample locations. Trees less than 5 inches d.b.h. were tallied on a portion of the fixed-radius plots around the point centers.

3. Equations prepared from detailed measurements collected on standing trees in the Southern Mountain Region of Virginia, and similar measurements taken throughout the Southeast, were used to compute the volumes of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements on standing trees required to construct the volume equations.

4. Felled trees were measured at active cutting operations throughout the State to generate utilization factors for product and species groups that will be analyzed at the State level.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 594 permanent sample plots which were established in the third survey.

6. Onwership information was collected from local contacts, correspondence, and public records. In those counties where the sample missed a particular ownership class, temporary sample plots were added and measured to describe the forest conditions within the ownership class.

7. All field data were sent to Asheville for editing and were punched into cards and stored on magnetic tape for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

RELIABILITY OF THE DATA

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of commercial forest land	0.89
Per billion cubic feet of growing stock	4.82
Per billion cubic feet of net annual growth	1.19
Per billion cubic feet of annual removals	2.52

SAMPLING ERRORS FOR COUNTY AND UNIT TOTALS,[1] IN TERMS OF ONE STANDARD ERROR

COUNTY	COMMERCIAL FOREST AREA	CUBIC-FOOT VOLUME OF GROWING STOCK		
		INVENTORY	GROWTH	REMOVALS
		SAMPLING ERROR[2]		
BLAND	1.45	8.76	10.94	54.53
BUCHANAN	2.08	7.21	14.72	35.13
CARROLL	1.98	11.38	13.07	37.43
DICKENSON	2.54	9.40	9.74	42.74
FLOYD	2.07	17.53	19.08	62.77
GILES	1.10	10.19	8.91	69.70
GRAYSON	1.73	11.73	11.89	83.94
LEE	2.28	12.10	15.54	30.20
MONTGOMERY	2.24	9.36	10.65	69.61
PULASKI	2.67	11.43	10.67	60.82
RUSSELL	3.16	12.04	13.84	53.52
SCOTT	1.73	7.52	11.56	53.38
SMYTH	1.37	8.93	9.47	63.33
TAZEWELL	2.32	8.44	9.75	77.94
WASHINGTON	2.60	10.64	13.59	57.69
WISE	2.06	9.72	15.67	35.12
WYTHE	2.16	9.25	14.98	73.22
UNIT TOTAL	0.51	2.53	3.26	12.44

[1] SAMPLING ERROR OF BREAKDOWNS OF COUNTY AND UNIT TOTALS MAY BE COMPUTED WITH THE FOLLOWING FORMULA:

$$E = \frac{(SE)\sqrt{(\text{SPECIFIED VOLUME OR AREA})}}{\sqrt{(\text{VOLUME OR AREA TOTAL IN QUESTION})}}$$

WHERE: E = SAMPLING ERROR OF THE VOLUME OR AREA TOTAL IN QUESTION.
SE = SPECIFIED SAMPLING ERROR IN TABLE.

[2] BY RANDOM-SAMPLING FORMULA (IN PERCENT).

DEFINITIONS OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Cropland.--Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.--Growing-stock trees of commercial species having no serious defects in quality limiting present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.--A classification of trees based on diameter outside bark, measured at breast height ($4\frac{1}{2}$ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm.--Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.--A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.--Lands owned by farm operators.

Forest industry lands.--Lands owned by companies or individuals operating wood-using plants.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Longleaf-slash pine.--Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.--Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.--Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.--Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Gross growth.--Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.--Soft-textured hardwoods such as boxelder, red and silver maple, buckeye, hackberry, loblolly-bay, silverbell (in mountains), butternut, sweetgum, yellow-poplar, cucumbertree, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.--Hard-textured hardwoods such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.--Includes former croplands, orchards, improved pastures and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.--All roundwood products except fuelwood.

Land area.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area.

Logging residues.--The unused portions of trees cut or killed by logging.

Miscellaneous Federal lands.--Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands - corporate.--Lands owned by private corporations other than forest industry.

Miscellaneous private lands - individual.--Privately owned lands other than forest-industry, farmer-owned, or corporate lands.

Mortality.--Number or sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.--Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.--The increase in volume for a specific year.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests and lands formerly forested where timber management is precluded by development for other uses.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.--Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.--Publicly owned lands other than National Forests.

Overstocked areas.--Areas where growth of trees is significantly reduced by excessive numbers of trees.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Rangeland.--Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.--(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.--Live trees 1.0 to 5.0 inches in diameter at breast height.

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.--Live trees of commercial species containing at least a 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.--Net volume of the saw-log portion of live sawtimber in board-foot International 1/4-inch rule.

Seedlings.--Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.--Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.--Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.--Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.--Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.--Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.--Yellow pine species which include loblolly, longleaf, slash, shortleaf, pitch, Virginia, Table-Mountain, sand, and spruce pine.

Other softwoods.--White pine, hemlock, cypress, eastern redcedar, white-cedar, spruce, and fir.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and seedlings.

State, county, and municipal lands.--Lands owned by States, counties, and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land. (See page 12.)

Timber removals.--The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

STOCKING STANDARD

D.B.H. CLASS	MINIMUM NUMBER OF TREES PER ACRE FOR FULL STOCKING	MINIMUM BASAL AREA PER ACRE FOR FULL STOCKING	PERCENT STOCKING ASSIGNED EACH TALLY TREE[1]
SEEDLINGS	600	--	5.0
2	560	--	5.4
4	460	--	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] TREES LESS THAN 5.0 INCHES D.B.H. WERE TALLIED ON A 10-POINT CLUSTER OF CIRCULAR, 1/300-ACRE PLOTS AT EACH SAMPLE LOCATION. TREES 5.0 INCHES D.B.H. AND LARGER WERE TALLIED ON A 10-POINT CLUSTER OF VARIABLE PLOTS USING A BASAL AREA FACTOR OF 37.5 AT EACH SAMPLE LOCATION.

OVERSTOCKED--OVER 130 PERCENT
FULLY STOCKED--100-130 PERCENT
MEDIUM STOCKED--60-99 PERCENT
POORLY STOCKED--16.7-59 PERCENT
NONSTOCKED--LESS THAN 16.7 PERCENT

CUBIC FEET OF WOOD PER AVERAGE CORD (EXCLUDING BARK)

D.B.H. CLASS	ALL SPECIES	PINE	OTHER SOFTWOOD	HARDWOOD
6	60.3	61.0	68.2	60.0
8	68.7	68.1	76.0	68.4
10	73.7	73.1	81.4	73.4
12	76.9	76.7	85.2	76.4
14	79.1	79.4	88.2	78.4
16	80.4	81.6	90.4	79.8
18	81.5	83.3	92.3	80.8
20	82.2	84.8	93.8	81.5
22	82.8	86.0	95.1	82.1
24+	83.9	87.9	97.9	83.1
AVERAGE	74.4	71.7	84.5	74.0

COUNTY TABLES

THE COUNTY TABLES ARE INTENDED FOR USE IN COMPILING FOREST RESOURCE ESTIMATES FOR GROUPS OF COUNTIES. BECAUSE THE SAMPLING PROCEDURE USED BY THE FOREST SURVEY WAS INTENDED PRIMARILY TO FURNISH INVENTORY DATA FOR THE SURVEY UNIT AS A WHOLE, INDIVIDUAL COUNTY ESTIMATES HAVE LIMITED AND VARIABLE ACCURACY. AS COUNTY TOTALS ARE BROKEN DOWN BY VARIOUS SUBDIVISIONS, THE POSSIBILITY OF ERROR INCREASES AND IS GREATEST FOR THE SMALLEST ITEMS. THE ORDER OF THIS INCREASE CAN BE COMPUTED WITH THE FORMULA ON PAGE 5.

TABLE 1. AREA, BY LAND CLASS AND COUNTY, 1977

COUNTY	ALL LAND[1]	FOREST LAND				NONFOREST LAND[2]
		TOTAL	COMMERCIAL FOREST	UNPRODUCTIVE FOREST	PRODUCTIVE-RESERVED	
	ACRES					
BLAND	236,160	174,198	173,604	394	200	61,962
BUCHANAN	325,120	271,215	271,192	--	23	53,905
CARROLL	318,720	186,936	185,854	--	1,082	131,784
DICKENSON	214,080	178,990	176,529	--	2,461	35,090
FLOYD	245,120	138,718	136,861	--	1,857	106,402
GILES	232,257	170,925	170,265	--	660	61,332
GRAYSON	291,200	160,484	155,892	--	4,592	130,716
LEE	280,320	167,562	159,989	315	7,258	112,758
MONTGOMERY	255,854	149,767	149,584	183	--	106,087
PULASKI	213,143	116,113	116,113	--	--	97,030
RUSSELL	309,120	159,563	159,563	--	--	149,557
SCOTT	344,960	230,907	230,360	122	425	114,053
SMYTH	278,400	176,947	173,650	90	3,207	101,453
TAZEWELL	334,080	204,713	204,713	--	-	129,367
WASHINGTON	371,310	190,137	189,973	--	164	181,173
WISE	265,600	210,634	210,513	121	--	54,966
WYTHE	294,400	148,697	148,437	--	260	145,703
TOTAL	4,809,844	3,036,506	3,013,092	1,225	22,189	1,773,338

[1] FROM U. S. BUREAU OF THE CENSUS, LAND AND WATER AREA OF THE UNITED STATES, 1970.
[2] INCLUDES 22,554 ACRES OF WATER ACCORDING TO SURVEY STANDARDS OF AREA CLASSIFICATION BUT DEFINED BY THE BUREAU OF THE CENSUS AS LAND.

TABLE 2.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND COUNTY, 1977*

COUNTY	ALL OWNERSHIPS	OWNERSHIP CLASS							
		NATIONAL FOREST	MISCELLANEOUS FEDERAL	STATE	COUNTY AND MUNICIPAL	FOREST INDUSTRY	FARMER	MISCELLANEOUS PRIVATE	
								CORPORATE	INDIVIDUAL
	ACRES								
BLAND	173,604	71,067	--	--	500	10,417	74,442	--	17,178
BUCHANAN	271,192	--	--	--	--	22,310	44,800	89,599	114,483
CARROLL	185,854	2,426	--	766	--	4,222	122,680	5,576	50,184
DICKENSON	176,529	8,768	5,719	--	--	--	27,939	50,288	83,815
FLOYD	136,861	--	--	5	--	1,076	88,780	5,222	41,778
GILES	170,265	59,350	--	1,225	--	2,522	53,585	4,466	49,117
GRAYSON	155,892	15,581	--	--	--	1,819	110,792	11,080	16,620
LEE	159,989	11,370	--	--	--	279	37,085	10,596	100,659
MONTGOMERY	149,584	17,837	1,185	1,445	75	2,476	31,641	5,273	89,652
PULASKI	116,113	15,557	1,404	210	1,750	5,204	28,746	28,747	34,495
RUSSELL	159,563	--	--	5,147	249	130	64,596	39,752	49,689
SCOTT	230,360	25,268	--	--	200	381	119,297	5,681	79,533
SMYTH	173,650	65,928	--	8,837	75	--	57,206	--	41,604
TAZEWELL	204,713	5,742	--	4,171	--	2,250	71,520	60,515	60,515
WASHINGTON	189,973	18,284	47	7,663	--	--	54,661	--	109,318
WISE	210,513	37,576	4,200	--	3,593	--	27,524	88,075	49,545
WYTHE	148,437	53,637	--	--	1,891	7,389	53,450	5,345	26,725
TOTAL	3,013,092	408,391	12,555	29,469	8,333	60,475	1,068,744	410,215	1,014,910

TABLE 3. - *AREA OF COMMERCIAL FOREST LAND, BY FOREST-TYPE GROUP AND COUNTY, 1977*

COUNTY	ALL TYPE GROUPS	FOREST-TYPE GROUP								
		WHITE PINE-HEMLOCK	SPRUCE FIR	LONG LEAF SLASH	LOBLOLLY SHORTLEAF	OAK PINE	OAK HICKORY	OAK GUM CYPRESS	ELM-ASH-COTTONWOOD	MAPLE-BEECH-BIRCH
					ACRES					
BLAND	173,604	5,727	--	--	4,738	15,703	147,436	-	--	-
BUCHANAN	271,192	--	--	--	[illegible]	5,955	241,326	-	[illegible]	19,911
CARROLL	185,854	33,457	--	--	11,[illegible]94	32,103	103,[illegible]85	-	--	--
DICKENSON	176,529	-	-	-	[illegible],588	-	143,902	--	--	27,939
FLOYD	136,861	20,890	--	-	16,744	31,335	[illegible]7,889	-	5	--
GILES	170,265	--	--	-	4,465	4,465	143,474	-	4,465	13,396
GRAYSON	158,842	23,978	-	-	[illegible]	8,[illegible]7	115,986	-	-	7,791
LEE	154,989	--	--	--	5,[illegible]34	16,1[illegible]	13[illegible],522	-	-	5,298
MONTGOMERY	149,584	5,349	-	-	18,245	26,364	99,671	--	--	--
PULASKI	116,113	--	-	-	14,101	17,148	81,610	--	3,154	--
RUSSELL	159,563	--	--	--	14,906	--	139,689	-	--	4,969
SCOTT	230,360	-	-	-	11,362	--	218,998	-	--	--
SMYTH	173,650	-	--	--	5,532	14,819	142,595	--	-	10,694
TAZEWELL	204,716	--	--	--	5,501	--	193,711	-	5,501	--
WASHINGTON	189,9[illegible]3	--	--	--	8,073	18,219	165,681	--	--	--
WISE	210,513	--	--	--	-	5,505	188,493	-	--	16,515
WYTHE	148,[illegible]47	-	--	--	5,345	12,600	125,147	-	--	5,345
TOTAL	3,013,09[illegible]	89,401	-	--	134,6[illegible]6	212,[illegible]08	[illegible],451,404	-	13,1[illegible]	111,858

TABLE 4.--AREA OF COMMERCIAL FOREST LAND, BY STAND-SIZE CLASS AND COUNTY, 1977

COUNTY	ALL STANDS	STAND-SIZE CLASS			NONSTOCKED AREAS
		SAWTIMBER	POLETIMBER	SAPLING-SEEDLING	
	ACRES				
BLAND	173,604	75,723	88,405	9,476	--
BUCHANAN	271,192	144,293	92,056	29,866	4,977
CARROLL	185,854	86,071	54,408	39,033	6,342
DICKENSON	176,529	93,919	65,846	11,176	5,588
FLOYD	136,861	67,891	37,631	20,890	10,449
GILES	170,265	62,103	86,911	21,251	--
GRAYSON	155,892	67,950	57,648	16,619	13,675
LEE	159,989	53,259	68,871	37,859	--
MONTGOMERY	149,584	66,835	72,202	10,547	--
PULASKI	116,113	18,541	78,295	19,277	--
RUSSELL	159,563	54,659	55,216	39,751	9,937
SCOTT	230,360	122,039	82,856	25,465	--
SMYTH	173,650	100,119	62,836	10,695	--
TAZEWELL	204,713	92,436	101,275	5,501	5,501
WASHINGTON	189,973	66,808	104,924	18,241	--
WISE	210,513	106,601	68,773	26,041	9,098
WYTHE	148,437	76,929	71,508	--	--
TOTAL	3,013,092	1,356,176	1,249,661	341,688	65,567

TABLE 5. AREA OF COMMERCIAL FOREST LAND, BY SITE CLASS AND COUNTY, 1977

COUNTY	ALL CLASSES	SITE CLASS				
		1	2	3	4	5
	ACRES					
BLAND	173,604	--	11,452	11,453	26,654	124,045
BUCHANAN	271,192	--	--	19,911	161,744	89,537
CARROLL	185,854	5,576	5,577	16,728	122,089	35,884
DICKENSON	176,529	5,588	--	11,307	106,165	53,469
FLOYD	136,861	--	15,667	5,222	100,306	15,666
GILES	170,265	--	4,465	--	88,027	77,773
GRAYSON	155,892	5,539	--	11,080	103,785	35,488
LEE	159,989	--	--	42,384	107,010	10,595
MONTGOMERY	149,584	--	75	--	128,381	21,128
PULASKI	116,113	--	--	5,756	71,228	39,129
RUSSELL	159,563	--	9,938	--	74,962	74,663
SCOTT	230,360	--	--	5,681	116,364	108,315
SMYTH	173,650	5,200	--	5,200	126,748	36,502
TAZEWELL	204,713	--	--	5,501	125,439	73,773
WASHINGTON	189,973	--	--	30,368	129,193	30,412
WISE	210,513	--	--	16,515	189,798	4,200
WYTHE	148,437	--	--	18,098	64,178	66,161
TOTAL	3,013,092	21,903	47,174	205,204	1,842,071	896,740

TABLE 6. AREA OF COMMERCIAL FOREST LAND, BY STOCKING CLASSES OF GROWING STOCK TREES, BY COUNTY, '97

COUNTY	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
			ACRES			
BLAND	173,604	--	26,608	89,939	57,057	--
BUCHANAN	271,192	--	9,955	134,398	121,862	4,977
CARROLL	185,854	--	27,881	93,441	58,190	6,342
DICKENSON	176,529	--	5,587	99,373	65,981	5,588
FLOYD	136,861	--	10,445	53,300	62,667	10,449
GILES	170,265	--	39,983	99,743	30,539	--
GRAYSON	155,892	--	8,137	62,409	71,671	13,675
LEE	159,989	--	21,190	90,452	48,347	--
MONTGOMERY	149,584	--	30,903	95,110	23,571	--
PULASKI	116,113	--	17,457	74,364	24,292	--
RUSSELL	159,563	--	15,334	94,410	39,882	9,937
SCOTT	230,360	--	15,773	153,569	61,018	--
SMYTH	173,650	--	48,273	98,751	26,626	--
TAZEWELL	204,713	--	27,507	121,273	50,432	5,501
WASHINGTON	189,973	6,074	18,221	117,003	48,675	--
WISE	210,513	--	28,051	121,809	51,555	9,098
WYTHE	148,437	--	21,399	76,930	50,108	--
TOTAL	3,013,092	6,074	372,704	1,676,274	892,473	65,567

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 7.--VOLUME OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1977

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUBIC FEET[1]				
BLAND	411,167	32,250	58,700	97,571	222,646	167,659	10,241	15,461	39,432	102,525
BUCHANAN	712,917	--	29,235	241,279	442,403	267,247	--	6,621	106,130	154,496
CARROLL	523,563	21,694	233,303	29,695	238,871	202,531	15,011	59,910	21,273	106,337
DICKENSON	589,773	20,168	25,458	211,034	333,113	199,619	9,591	5,337	72,142	112,549
FLOYD	417,358	18,158	183,351	60,990	154,859	132,788	11,224	44,619	23,499	53,446
GILES	663,321	33,760	50,846	150,005	428,710	250,282	11,606	9,853	62,983	165,840
GRAYSON	475,038	16,203	109,320	81,772	267,743	168,100	3,655	31,379	33,885	99,181
LEE	456,446	7,307	4,049	150,340	294,750	179,795	3,571	3,704	53,752	118,768
MONTGOMERY	519,356	66,005	107,721	52,279	293,351	211,243	28,371	34,451	21,761	126,660
PULASKI	232,030	56,791	17,999	41,948	115,292	120,106	21,041	3,591	15,157	80,317
RUSSELL	434,801	1,532	8,786	163,669	260,814	156,837	359	2,219	56,740	97,519
SCOTT	772,466	36,195	7,114	282,673	446,484	275,299	13,879	3,031	93,136	165,253
SMYTH	809,952	104,477	66,314	98,035	541,126	290,817	31,746	16,640	44,474	197,957
TAZEWELL	686,029	7,067	17,576	178,540	482,846	266,111	2,191	3,154	88,715	172,051
WASHINGTON	771,921	47,233	21,694	313,535	389,459	287,117	14,841	5,672	111,044	155,560
WISE	674,338	4,922	47,908	221,931	399,577	253,954	1,268	9,499	90,667	152,520
WYTHE	492,731	66,339	24,493	56,553	345,346	204,149	18,416	7,514	19,383	158,836
TOTAL	9,643,207	540,101	1,013,867	2,431,849	5,657,390	3,633,654	197,011	262,655	954,173	2,219,815

[1] FACTORS FOR CONVERTING TO CORDS ARE SHOWN ON PAGE 12.

TABLE 8.--*NET ANNUAL GROWTH OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976*

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					*THOUSAND CUBIC FEET*				
BLAND	21,165	1,407	3,399	6,230	10,129	6,091	191	670	1,616	3,614
BUCHANAN	30,353	--	1,193	16,518	12,642	13,155	--	188	8,241	4,726
CARROLL	32,584	2,398	13,006	4,554	12,626	7,415	483	2,795	854	3,283
DICKENSON	24,961	1,433	771	12,707	10,060	6,294	295	155	2,980	2,867
FLOYD	19,344	1,559	10,919	2,372	4,494	6,497	1,272	2,750	1,021	1,454
GILES	28,858	1,515	1,591	9,127	16,625	9,238	232	331	3,891	4,784
GRAYSON	22,280	148	6,436	4,890	10,806	5,759	43	1,482	1,301	2,933
LEE	20,520	338	148	7,139	12,895	6,751	98	143	3,166	3,344
MONTGOMERY	28,826	3,175	9,482	3,525	12,644	7,155	774	1,654	902	3,825
PULASKI	12,407	2,494	578	2,382	6,953	4,260	495	101	878	2,786
RUSSELL	18,764	34	409	8,674	9,647	5,562	6	83	2,845	2,628
SCOTT	32,560	1,951	418	13,994	16,197	10,466	331	72	4,491	5,572
SMYTH	34,983	2,580	5,172	8,009	19,222	8,360	781	609	1,653	5,317
TAZEWELL	30,003	84	370	13,403	16,146	8,819	40	63	3,875	4,841
WASHINGTON	38,078	1,290	1,109	19,419	16,260	10,526	302	158	5,363	4,713
WISE	31,560	131	1,725	13,794	15,910	9,582	26	239	4,300	5,018
WYTHE	24,409	1,767	1,211	1,881	19,550	7,233	419	512	493	5,878
TOTAL	451,655	22,304	57,937	148,618	222,796	132,162	6,670	12,034	46,660	67,598

TABLE 9. ANNUAL REMOVALS OF SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES GROUP AND COUNTY, 1976

COUNTY	SAWTIMBER					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET					THOUSAND CUB. C FEET				
BLAND	11,883	--	--	515	11,368	2,962	--	--	276	2,686
BUCHANAN	24,262	--	1,085	13,779	9,398	5,544	--	217	2,674	2,653
CARROLL	13,101	--	7,826	2,502	2,773	4,123	--	1,611	1,271	1,241
DICKENSON	10,223	--	--	2,676	7,547	3,324	--	--	725	2,599
FLOYD	10,449	--	5,392	--	5,057	2,257	--	1,173	--	1,084
GILES	4,395	--	--	2,484	1,911	884	--	--	455	429
GRAYSON	1,261	--	774	487	--	911	--	753	158	--
LEE	14,508	--	--	3,793	10,715	4,287	--	160	1,189	2,938
MONTGOMERY	1,593	--	--	1,593	--	596	--	--	286	310
PULASKI	885	885	--	--	--	496	167	--	--	329
RUSSELL	10,237	--	--	4,827	5,410	2,877	--	--	1,419	1,458
SCOTT	10,772	--	--	3,614	7,158	2,612	--	--	794	1,818
SMYTH	4,201	--	--	1,698	2,503	1,415	--	--	390	1,025
TAZEWELL	6,733	--	--	4,347	2,386	1,416	--	--	941	475
WASHINGTON	4,984	854	--	--	4,130	1,264	163	--	--	1,101
WISE	14,705	530	--	1,971	12,204	4,625	259	--	578	3,788
WYTHE	6,305	--	--	--	6,305	1,521	--	--	--	1,521
TOTAL	150,497	2,269	15,077	44,286	88,865	41,114	589	3,914	11,156	25,455

TABLE 10.--*AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS, 1977*

FOREST TYPE	ALL OWNERSHIPS	OWNERSHIP CLASS				
		NATIONAL FOREST	OTHER PUBLIC	FOREST INDUSTRY	FARMER	MISC. PRIVATE
	ACRES					
SOFTWOOD TYPES:						
WHITE PINE-HEMLOCK	89,401	--	75	1,819	65,592	21,915
SPRUCE-FIR	--	--	--	--	--	--
LONGLEAF PINE	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--
LOBLOLLY PINE	--	--	--	--	--	--
SHORTLEAF PINE	4,969	--	--	--	--	4,969
VIRGINIA PINE	91,799	--	38	3,678	43,786	44,297
SAND PINE	--	--	--	--	--	--
EASTERN REDCEDAR	20,735	--	--	--	9,937	10,798
POND PINE	--	--	--	--	--	--
SPRUCE PINE	--	--	--	--	--	--
PITCH PINE	9,203	4,738	--	--	--	4,465
TABLE-MOUNTAIN PINE	7,970	5,494	--	2,476	--	--
TOTAL	224,077	10,232	113	7,973	119,315	86,444
HARDWOOD TYPES:						
OAK-PINE	212,628	17,437	6,810	4,501	69,001	114,879
OAK-HICKORY	2,391,693	329,149	40,275	46,740	850,479	1,125,050
CHESTNUT OAK	59,711	38,288	--	1,261	10,192	9,970
SOUTHERN SCRUB OAK	--	--	--	--	--	--
OAK-GUM-CYPRESS	--	--	--	--	--	--
ELM-ASH-COTTONWOOD	13,125	--	3,159	--	--	9,966
MAPLE-BEECH-BIRCH	111,858	13,285	--	--	19,757	78,816
TOTAL	2,789,015	398,159	50,244	52,502	949,429	1,338,681
ALL TYPES	3,013,092	408,391	50,357	60,475	1,068,744	1,425,125

TABLE 11.--*AREA OF COMMERCIAL FOREST LAND, BY OWNERSHIP AND STOCKING CLASSES OF GROWING-STOCK TREES, 1977*

OWNERSHIP CLASSES	ALL CLASSES	STOCKING PERCENTAGE[1]				
		OVER 130	100-130	60-99	16.7-59	LESS THAN 16.7
	ACRES					
NATIONAL FOREST	408,391	--	84,575	204,129	117,091	2,596
OTHER PUBLIC	50,357	--	5,881	23,868	16,244	4,364
FOREST INDUSTRY	60,475	--	10,417	20,091	29,967	--
FARMER	1,068,744	6,074	112,158	599,918	318,247	32,347
MISC. PRIVATE	1,425,125	--	159,673	828,268	410,924	26,260
ALL OWNERSHIPS	3,013,092	6,074	372,704	1,676,274	892,473	65,567

[1] SEE STOCKING STANDARDS ON PAGE 12.

TABLE 12.—VOLUME OF TIMBER ON COMMERCIAL FOREST LAND, BY CLASS AND SPECIES GROUP, 1977

CLASS OF TIMBER	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	- - - - - - - - THOUSAND CUBIC FEET - - - - - - - -				
SAWTIMBER TREES:					
SAW-LOG PORTION	1,873,372	105,554	178,345	457,285	1,132,188
UPPER-STEM PORTION	372,958	18,481	31,226	92,998	230,253
TOTAL	2,246,330	124,035	209,571	550,283	1,362,441
POLETIMBER TREES	1,387,324	72,976	53,084	403,890	857,374
ALL GROWING-STOCK TREES	3,633,654	197,011	262,655	954,173	2,219,815
ROUGH TREES:					
SAWTIMBER-SIZE TREES	350,737	7,520	2,104	59,952	281,161
POLETIMBER-SIZE TREES	454,649	15,053	2,474	95,569	341,553
TOTAL	805,386	22,573	4,578	155,521	622,714
ROTTEN TREES:					
SAWTIMBER-SIZE TREES	105,060	229	--	27,143	77,688
POLETIMBER-SIZE TREES	10,836	--	--	4,193	6,643
TOTAL	115,896	229	--	31,336	84,331
SALVABLE DEAD TREES:					
SAWTIMBER-SIZE TREES	3,477	991	--	600	1,886
POLETIMBER-SIZE TREES	4,044	1,166	381	711	1,786
TOTAL	7,521	2,157	381	1,311	3,672
TOTAL, ALL TIMBER	4,562,457	221,970	267,614	1,142,341	2,930,532

TABLE 13.--*NUMBER OF GROWING-STOCK TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND TREES										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	1,428	342	558	313	136	58	13	--	--	8	--
LOBLOLLY PINE	72	--	50	--	--	22	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	13,385	5,255	4,788	2,200	909	188	45	--	--	--	--
PITCH PINE	6,061	1,702	1,147	1,402	979	463	224	111	18	15	--
TABLE-MOUNTAIN PINE	3,185	1,097	1,022	449	288	215	73	33	8	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	15,017	4,391	3,418	2,587	1,976	1,441	644	298	161	95	6
EASTERN HEMLOCK	4,877	1,678	1,078	719	538	327	166	151	67	112	41
SPRUCE AND FIR	253	--	116	30	76	19	12	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	3,587	2,735	504	259	89	--	--	--	--	--	--
TOTAL SOFTWOODS	47,865	17,200	12,681	7,959	4,991	2,733	1,177	593	254	230	47
HARDWOOD:											
SELECT WHITE OAKS	23,625	8,830	5,090	4,139	2,429	1,294	869	469	225	258	22
SELECT RED OAKS	19,010	5,423	4,503	2,812	2,025	1,593	1,003	624	446	501	80
CHESTNUT OAK	45,479	16,493	12,229	7,028	4,097	2,235	1,459	774	461	645	58
OTHER WHITE OAKS	146	--	71	--	31	19	13	12	--	--	--
OTHER RED OAKS	42,806	15,772	10,165	7,007	3,855	2,984	1,558	858	402	177	28
HICKORY	29,118	11,065	7,940	4,664	2,390	1,460	831	469	166	133	--
YELLOW BIRCH	261	90	50	--	--	42	28	34	--	17	--
HARD MAPLE	7,677	3,155	2,042	1,102	451	382	283	123	75	59	5
SOFT MAPLE	23,339	11,412	5,453	3,592	1,469	636	319	225	137	96	--
BEECH	5,417	1,529	1,179	745	671	353	322	234	170	210	4
SWEETGUM	186	--	53	85	31	17	--	--	--	--	--
TUPELO AND BLACKGUM	3,836	2,162	515	456	109	233	188	90	28	55	--
ASH	3,240	1,625	502	373	227	202	157	89	19	42	4
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	4,140	845	959	771	649	324	267	154	63	101	7
YELLOW-POPLAR	43,923	14,322	10,268	7,810	5,256	3,055	1,654	925	325	300	8
BAY AND MAGNOLIA	6,493	2,775	2,257	911	243	136	45	13	70	39	4
BLACK CHERRY	1,185	392	285	283	113	68	15	13	9	7	--
BLACK WALNUT	1,465	254	399	263	207	155	88	61	19	6	13
SYCAMORE	289	100	--	--	83	17	--	24	19	30	16
BLACK LOCUST	8,391	2,533	2,669	1,672	776	378	231	65	19	48	--
ELM	1,161	528	436	72	80	--	17	--	28	--	--
OTHER EASTERN HARDWOODS	11,979	5,719	3,263	1,558	727	334	102	117	58	81	20
TOTAL HARDWOODS	283,166	105,024	70,328	45,343	25,919	15,917	9,449	5,373	2,739	2,805	269
ALL SPECIES	331,031	122,224	83,009	53,302	30,910	18,650	10,626	5,966	2,993	3,035	316

TABLE 14.--VOLUME OF ALL LIVE TREES ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0 14.9	15.0-16.9	17.0 18.9	19.0-20.9	21.0 28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	-	-	--	--	--	--
SLASH PINE	--	-	--	--	--	--	--	--	--	-	--
SHORTLEAF PINE	12,746	1,166	3,378	3,038	1,996	1,686	612	--	--	870	--
LOBLOLLY PINE	594	--	283	--	--	311	-	--	--	--	--
POND PINE	--	--	-	--	--	-	-	--	--	--	--
VIRGINIA PINE	104,872	21,565	37,354	25,338	14,194	4,673	1,748	--	--	--	--
PITCH PINE	67,512	5,171	7,321	14,254	14,513	11,083	7,834	5,385	901	1,049	--
TABLE-MOUNTAIN PINE	34,089	4,096	7,695	6,200	5,621	5,911	2,504	1,554	508	-	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	-	-	--	--	--	--
EASTERN WHITE PINE	185,235	13,027	24,045	29,224	32,496	33,807	21,319	13,248	9,070	7,845	1,154
EASTERN HEMLOCK	66,875	3,765	5,894	6,824	7,318	7,885	5,996	6,645	3,535	10,872	8,141
SPRUCE AND FIR	3,252	--	474	470	1,381	500	427	--	--	--	--
BALDCYPRESS	--	--	-	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	11,871	5,911	2,442	2,294	1,224	-	-	-	--	--	-
TOTAL SOFTWOODS	487,046	54,701	88,886	87,842	78,743	65,856	40,440	26,833	14,014	20,436	9,295
HARDWOOD:											
SELECT WHITE OAKS	308,611	30,124	36,132	51,755	43,698	38,310	34,034	22,385	18,086	28,377	5,410
SELECT RED OAKS	363,260	23,043	36,426	30,836	42,928	50,490	39,655	34,088	28,660	50,927	17,207
CHESTNUT OAK	672,043	64,680	92,601	100,608	93,815	70,020	68,579	45,470	35,665	78,809	21,796
OTHER WHITE OAKS	2,291	--	292	-	748	418	374	459	--	--	--
OTHER RED OAKS	522,147	58,741	72,379	87,879	74,519	82,646	55,028	42,321	25,650	17,655	5,329
HICKORY	330,476	35,689	54,754	60,774	48,639	42,803	32,239	26,289	10,925	17,987	377
YELLOW BIRCH	11,399	973	1,355	723	394	1,547	1,331	2,592	--	2,484	--
HARD MAPLE	109,811	14,394	16,891	16,413	11,596	12,659	11,850	7,968	5,350	8,238	4,452
SOFT MAPLE	280,317	52,016	51,384	57,223	36,693	22,861	18,058	14,571	11,207	13,171	3,133
BEECH	163,530	10,755	12,621	13,557	19,822	15,793	19,301	16,104	15,859	34,656	5,062
SWEETGUM	2,059	--	388	880	399	392	--	--	--	--	--
TUPELO AND BLACKGUM	65,014	8,397	7,892	9,293	5,532	8,208	9,728	5,797	3,116	7,051	--
ASH	52,861	7,544	8,419	6,375	7,075	5,748	6,306	4,212	1,114	5,344	724
COTTONWOOD	--	--	--	--	--	-	--	--	--	--	--
BASSWOOD	89,289	5,544	11,637	10,337	13,984	12,050	10,221	8,900	5,259	10,119	1,238
YELLOW POPLAR	561,769	47,535	75,415	93,288	103,811	84,039	61,088	45,469	19,978	28,325	2,821
BAY AND MAGNOLIA	62,202	9,201	15,038	13,077	6,547	5,192	2,169	1,252	3,895	5,321	510
BLACK CHERRY	20,587	1,963	4,361	5,097	2,589	3,113	975	1,026	623	840	--
BLACK WALNUT	32,167	1,986	5,972	4,935	3,466	4,675	3,839	3,663	1,254	524	1,853
SYCAMORE	10,862	595	--	--	1,689	477	--	1,209	1,030	3,254	2,608
BLACK LOCUST	164,514	22,263	36,771	38,731	23,423	19,417	13,399	5,145	4,605	4,760	--
ELM	10,951	2,056	2,600	1,488	1,840	-	1,090	--	1,624	253	--
OTHER EASTERN HARDWOODS	231,730	63,191	54,107	38,828	27,104	15,014	8,891	6,859	4,438	9,650	3,648
TOTAL HARDWOODS	4,067,890	460,690	597,435	651,097	570,611	491,872	398,155	295,779	198,338	327,745	76,168
ALL SPECIES	4,554,936	515,391	686,321	738,939	649,354	557,728	438,595	322,612	212,352	348,181	85,463

TABLE 15.--*VOLUME OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND CUBIC FEET										
SOFTWOOD:											
LONGLEAF PINE	--	--	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	12,340	1,018	3,120	3,238	1,996	1,686	612	--	--	670	--
LOBLOLLY PINE	594	--	283	--	--	311	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	89,193	14,704	32,390	22,779	13,794	4,286	1,240	--	--	--	--
PITCH PINE	64,446	4,278	6,565	13,701	13,878	10,854	7,834	5,386	901	1,049	--
TABLE-MOUNTAIN PINE	30,438	3,700	6,918	5,069	4,979	5,557	2,153	1,554	508	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	182,349	12,375	23,530	28,593	32,496	33,458	20,580	13,248	9,070	7,845	1,154
EASTERN HEMLOCK	65,774	3,570	5,373	6,824	7,318	7,885	5,611	6,645	3,535	10,872	8,141
SPRUCE AND FIR	3,252	--	474	470	1,381	500	427	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--	--	--
CEDARS	11,280	5,535	2,227	2,294	1,224	--	--	--	--	--	--
TOTAL SOFTWOODS	459,666	45,180	80,880	82,968	77,066	64,537	38,457	26,833	14,014	20,436	9,295
HARDWOOD:											
SELECT WHITE OAKS	265,330	25,060	31,300	46,054	41,078	33,263	30,196	20,845	13,117	20,818	3,599
SELECT RED OAKS	312,290	17,100	29,780	32,834	36,693	42,910	35,128	30,312	26,110	46,069	15,354
CHESTNUT OAK	498,454	46,848	73,733	76,722	71,771	55,514	50,399	34,042	25,005	54,529	9,891
OTHER WHITE OAKS	1,876	--	292	--	428	418	279	459	--	--	--
OTHER RED OAKS	459,521	47,794	62,836	77,680	65,533	72,106	51,878	39,641	23,371	14,479	4,203
HICKORY	288,210	29,429	46,795	51,472	42,926	38,829	30,805	23,802	10,436	13,716	--
YELLOW BIRCH	5,573	422	423	--	--	870	928	1,399	--	1,531	--
HARD MAPLE	84,149	10,402	13,532	12,569	8,546	9,874	10,426	6,318	5,350	5,663	1,469
SOFT MAPLE	190,501	36,777	35,254	40,100	26,080	16,744	11,142	9,941	7,763	6,700	--
BEECH	98,428	4,256	7,826	8,897	12,989	10,155	11,543	11,218	10,884	20,003	657
SWEETGUM	2,059	--	388	880	399	392	--	--	--	--	--
TUPELO AND BLACKGUM	35,617	5,120	2,602	4,038	1,628	5,103	6,687	3,764	1,700	4,975	--
ASH	35,555	4,440	3,120	3,888	3,930	5,234	5,067	4,212	1,114	3,826	724
COTTONWOOD	--	--	--	--	--	--	--	--	--	--	--
BASSWOOD	74,402	3,148	7,176	9,226	12,825	9,911	10,221	8,210	4,058	8,389	1,238
YELLOW-POPLAR	538,734	43,007	69,124	90,918	99,335	83,230	60,770	45,469	19,098	26,325	1,458
BAY AND MAGNOLIA	50,485	7,315	14,035	10,528	4,657	3,824	1,470	555	3,895	3,696	510
BLACK CHERRY	12,447	1,241	1,898	2,787	2,009	2,078	526	658	623	627	--
BLACK WALNUT	22,634	949	2,512	2,726	3,067	4,042	2,993	2,714	1,254	524	1,853
SYCAMORE	10,170	394	--	--	1,689	477	--	1,209	1,030	2,763	2,608
BLACK LOCUST	77,348	7,355	15,782	16,918	13,779	8,869	7,228	2,721	1,194	3,502	--
ELM	8,751	1,636	2,600	785	1,451	--	665	--	1,624	--	--
OTHER EASTERN HARDWOODS	101,454	18,998	21,985	17,568	12,809	8,202	3,441	4,986	3,144	6,673	3,648
TOTAL HARDWOODS	3,173,988	311,681	442,993	506,590	463,622	412,045	331,792	252,475	160,770	244,808	47,212
ALL SPECIES	3,633,654	356,861	523,873	589,558	540,688	476,582	370,249	279,308	174,784	265,244	56,507

TABLE 16. --*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES AND DIAMETER CLASS, 1977*

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 AND LARGER
	THOUSAND BOARD FEET								
SOFTWOOD:									
LONGLEAF PINE	--	--	--	--	--	--	--	--	--
SLASH PINE	--	--	--	--	--	--	--	--	--
SHORTLEAF PINE	36,755	11,527	8,837	8,660	3,503	--	--	4,228	--
LOBLOLLY PINE	1,512	--	--	1,512	--	--	--	--	--
POND PINE	--	--	--	--	--	--	--	--	--
VIRGINIA PINE	160,850	79,209	56,060	19,557	6,024	--	--	--	--
PITCH PINE	243,345	44,537	58,081	53,458	42,944	31,896	5,643	6,786	--
TABLE-MOUNTAIN PINE	97,639	20,532	23,507	29,277	12,020	9,143	3,160	--	--
SPRUCE PINE	--	--	--	--	--	--	--	--	--
SAND PINE	--	--	--	--	--	--	--	--	--
EASTERN WHITE PINE	691,620	102,604	139,267	161,940	107,260	73,020	52,412	47,553	7,564
EASTERN HEMLOCK	294,645	23,472	30,066	36,944	28,483	36,070	19,990	66,244	53,376
SPRUCE AND FIR	12,432	1,808	5,839	2,424	2,361	--	--	--	--
BALDCYPRESS	--	--	--	--	--	--	--	--	--
PONDCYPRESS	--	--	--	--	--	--	--	--	--
CEDARS	15,170	9,497	5,673	--	--	--	--	--	--
TOTAL SOFTWOODS	1,553,968	293,186	327,330	313,772	202,595	150,129	81,205	124,811	60,940
HARDWOOD:									
SELECT WHITE OAKS	682,835	--	133,825	127,861	129,812	96,394	64,073	109,932	20,938
SELECT RED OAKS	981,099	--	117,816	158,801	142,851	131,987	119,653	226,829	83,162
CHESTNUT OAK	1,247,842	--	227,598	206,037	208,927	151,848	118,051	279,933	55,448
OTHER WHITE OAKS	6,737	--	1,388	1,714	1,347	2,288	--	--	--
OTHER RED OAKS	1,120,956	--	213,566	278,769	224,245	186,501	115,295	77,700	24,880
HICKORY	689,973	--	143,447	157,993	139,461	116,584	54,114	78,374	--
YELLOW BIRCH	19,621	--	--	3,335	3,768	5,795	--	6,723	--
HARD MAPLE	206,121	--	31,276	39,785	44,898	28,773	25,205	28,310	7,874
SOFT MAPLE	305,768	--	82,279	62,294	46,284	44,592	36,728	33,591	--
BEECH	306,136	--	47,804	38,795	44,971	44,687	44,015	83,069	2,795
SWEETGUM	3,024	--	1,248	1,776	--	--	--	--	--
TUPELO AND BLACKGUM	101,816	--	4,847	18,642	27,575	16,989	8,076	25,687	--
ASH	103,850	--	12,269	20,259	21,888	19,731	5,497	20,025	4,181
COTTONWOOD	--	--	--	--	--	--	--	--	--
BASSWOOD	233,656	--	44,365	38,828	43,566	37,656	19,450	42,908	6,883
YELLOW-POPLAR	1,518,560	--	351,289	356,230	293,023	239,832	107,492	160,810	9,884
BAY AND MAGNOLIA	99,210	--	15,584	17,388	7,730	3,150	24,793	26,500	4,065
BLACK CHERRY	26,878	--	6,808	8,482	2,281	3,016	3,081	3,210	--
BLACK WALNUT	57,903	--	10,582	14,102	10,539	9,616	4,470	1,888	6,706
SYCAMORE	49,529	--	5,178	1,941	--	5,692	5,118	15,428	16,172
BLACK LOCUST	136,544	--	48,762	32,279	26,926	10,333	4,592	13,652	--
ELM	15,476	--	4,968	--	2,756	--	7,752	--	--
OTHER EASTERN HARDWOODS	175,705	--	42,059	30,726	14,139	21,468	14,084	32,789	20,440
TOTAL HARDWOODS	8,089,239	--	1,546,958	1,616,037	1,436,987	1,176,932	781,539	1,267,358	263,428
ALL SPECIES	9,643,207	293,186	1,874,288	1,929,809	1,639,582	1,327,061	862,744	1,392,169	324,368

TABLE 17.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY SPECIES, 1976*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - THOUSAND CUBIC FEET - -	
SOFTWOOD:		
YELLOW PINES	5,670	589
EASTERN WHITE PINE	9,528	3,012
SPRUCE AND FIR	136	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	2,370	902
TOTAL SOFTWOODS	17,704	4,503
HARDWOOD:		
SELECT WHITE AND RED OAKS	18,459	5,846
OTHER WHITE AND RED OAKS	26,243	9,926
HICKORY	8,668	4,962
YELLOW BIRCH	72	--
HARD MAPLE	2,633	1,239
SWEETGUM	81	--
ASH,WALNUT, AND BLACK CHERRY	3,135	845
YELLOW-POPLAR	32,993	7,283
TUPELO AND BLACKGUM	900	777
BAY AND MAGNOLIA	1,618	683
OTHER EASTERN HARDWOODS	19,656	5,050
TOTAL HARDWOODS	114,458	36,611
ALL SPECIES	132,162	41,114

TABLE 18.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1976*

SPECIES	NET ANNUAL GROWTH	ANNUAL TIMBER REMOVALS
	- - - THOUSAND BOARD FEET - - -	
SOFTWOOD:		
YELLOW PINES	22,304	2,269
EASTERN WHITE PINE	45,627	11,294
SPRUCE AND FIR	918	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	11,392	3,783
TOTAL SOFTWOODS	80,241	17,346
HARDWOOD:		
SELECT WHITE AND RED OAKS	68,545	22,846
OTHER WHITE AND RED OAKS	97,885	36,228
HICKORY	26,174	19,970
YELLOW BIRCH	214	--
HARD MAPLE	6,649	2,893
SWEETGUM	267	--
ASH,WALNUT, AND BLACK CHERRY	7,101	915
YELLOW-POPLAR	111,935	28,705
TUPELO AND BLACKGUM	2,915	2,314
BAY AND MAGNOLIA	3,288	3,389
OTHER EASTERN HARDWOODS	46,441	15,891
TOTAL HARDWOODS	371,414	133,151
ALL SPECIES	451,655	150,497

TABLE 19.--MORTALITY OF GROWING STOCK AND SAWTIMBER ON COMMERCIAL FOREST LAND, BY SPECIES, 1976

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	THOUSAND BOARD FEET
SOFTWOOD:		
YELLOW PINES	2,517	4,652
EASTERN WHITE PINE	444	--
SPRUCE AND FIR	--	--
CYPRESS	--	--
OTHER EASTERN SOFTWOODS	--	--
TOTAL SOFTWOODS	2,961	4,652
HARDWOOD:		
SELECT WHITE AND RED OAKS	1,889	5,210
OTHER WHITE AND RED OAKS	4,955	12,742
HICKORY	1,052	3,595
YELLOW BIRCH	--	--
HARD MAPLE	253	--
SWEETGUM	--	--
ASH, WALNUT, AND BLACK CHERRY	633	2,397
YELLOW-POPLAR	1,654	1,684
TUPELO AND BLACKGUM	--	--
BAY AND MAGNOLIA	242	1,744
OTHER EASTERN HARDWOODS	3,850	4,889
TOTAL HARDWOODS	14,528	32,261
ALL SPECIES	17,489	36,913

TABLE 20. --*VOLUME OF ALL LIVE TREES AND GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1977*

OWNERSHIP CLASS	ALL LIVE TREES					GROWING STOCK				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	651,274	42,242	14,882	118,989	475,161	522,859	39,845	14,882	98,329	369,803
OTHER PUBLIC	112,975	13,029	15,735	30,641	53,570	87,891	11,588	15,735	22,566	38,002
FOREST INDUSTRY	63,993	13,496	8,381	7,938	34,178	49,104	9,409	7,804	6,645	25,246
FARMER	1,652,415	53,366	162,766	416,986	1,019,297	1,290,718	47,113	159,939	338,747	744,919
MISCELLANEOUS PRIVATE	2,074,279	97,680	65,469	566,476	1,344,654	1,683,082	89,056	64,295	487,886	1,041,845
ALL OWNERSHIPS	4,554,936	219,813	267,233	1,141,030	2,926,860	3,633,654	197,011	262,655	954,173	2,219,815

TABLE 21. --*VOLUME OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1977*

OWNERSHIP CLASS	SMALL SAWTIMBER[1]					LARGE SAWTIMBER[2]				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	554,649	102,145	26,215	108,480	317,809	742,540	51,640	28,821	134,540	527,539
OTHER PUBLIC	102,478	26,475	38,633	13,104	24,266	132,299	5,194	23,617	45,998	57,490
FOREST INDUSTRY	47,463	9,595	20,336	6,993	10,539	54,242	--	12,993	2,039	39,210
FARMER	1,574,337	82,602	338,097	386,277	767,361	1,995,740	14,909	260,980	554,995	1,164,856
MISCELLANEOUS PRIVATE	1,818,356	193,937	96,253	531,976	996,190	2,621,103	53,604	167,922	647,447	1,752,130
ALL OWNERSHIPS	4,097,283	414,754	519,534	1,046,830	2,116,165	5,545,924	125,347	494,333	1,385,019	3,541,225

[1] VOLUME OF SAWTIMBER TREES LESS THAN 15.0 INCHES AT D.B.H.
[2] VOLUME OF SAWTIMBER TREES 15.0 INCHES AND LARGER AT D.B.H.

TABLE 22.--*NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND CUBIC FEET									
NATIONAL FOREST	16,963	639	726	3,520	12,078	5,257	426	--	262	4,569
OTHER PUBLIC	3,478	383	680	1,206	1,209	945	--	--	206	739
FOREST INDUSTRY	2,178	711	312	396	759	333	--	--	--	333
FARMER	46,610	1,434	7,877	14,793	22,506	17,365	--	3,261	4,540	9,564
MISCELLANEOUS PRIVATE	62,933	2,503	2,439	26,945	31,046	17,214	163	653	6,148	10,250
ALL OWNERSHIPS	132,162	5,670	12,034	46,860	67,598	41,114	589	3,914	11,156	25,455

TABLE 23.--*NET ANNUAL GROWTH AND REMOVALS OF SAWTIMBER ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS AND SPECIES GROUP, 1976*

OWNERSHIP CLASS	NET ANNUAL GROWTH					ANNUAL TIMBER REMOVALS				
	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD	ALL SPECIES	PINE	OTHER SOFTWOOD	SOFT HARDWOOD	HARD HARDWOOD
	THOUSAND BOARD FEET									
NATIONAL FOREST	57,522	3,011	2,585	16,397	35,529	16,023	1,415	--	--	14,608
OTHER PUBLIC	10,915	1,222	4,680	2,423	2,590	3,693	--	--	782	2,911
FOREST INDUSTRY	4,977	1,242	1,447	797	1,491	1,232	--	--	--	1,232
FARMER	176,867	6,579	37,695	54,649	77,944	68,899	--	11,773	21,227	35,899
MISCELLANEOUS PRIVATE	201,374	10,250	11,530	74,352	105,242	60,650	854	3,304	22,277	34,215
ALL OWNERSHIPS	451,655	22,304	57,937	148,618	222,796	150,497	2,269	15,077	44,286	88,865

TABLE 24. AVERAGE NET VOLUME PER ACRE OF SAWTIMBER, GROWING STOCK, AND OTHER LIVE TIMBER[1] ON COMMERCIAL FOREST LAND, BY OWNERSHIP CLASS, MAJOR FOREST TYPE, AND SPECIES GROUP, 1977

FOREST TYPE, SPECIES GROUP, AND CLASS OF MATERIAL	ALL OWNERSHIPS		OWNERSHIP CLASS									
			NATIONAL FOREST		OTHER PUBLIC		FOREST INDUSTRY		FARMER		MISC. PRIVATE	
	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET	BOARD FEET	CUBIC FEET
PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	2,826	933	2,352	1,079	8,789	2,359	1,731	809	3,426	1,065	1,546	584
HARDWOOD	431	220	--	182	152	212	--	106	594	277	369	166
TOTAL	3,257	1,153	2,352	1,261	8,941	2,571	1,731	915	4,020	1,342	1,915	750
OTHER TIMBER:												
SOFTWOOD	--	64	--	58	--	93	--	309	--	52	--	33
HARDWOOD	--	126	--	62	--	186	--	45	--	210	--	25
TOTAL	--	190	--	120	--	279	--	354	--	262	--	58
OAK-PINE TYPES:												
GROWING STOCK:												
SOFTWOOD	1,696	521	1,922	532	313	288	--	--	2,059	634	1,556	469
HARDWOOD	1,332	583	922	527	--	174	--	--	1,826	740	1,229	534
TOTAL	3,028	1,104	2,844	1,059	313	462	--	--	3,885	1,374	2,785	1,003
OTHER TIMBER:												
SOFTWOOD	--	32	--	54	--	51	--	--	--	14	--	38
HARDWOOD	--	223	--	367	--	180	--	--	--	203	--	212
TOTAL	--	255	--	421	--	231	--	--	--	217	--	250
UPLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	208	51	370	83	75	21	406	121	183	46	173	43
HARDWOOD	2,993	1,168	2,752	1,172	2,576	1,128	1,423	733	3,108	1,161	3,057	1,189
TOTAL	3,201	1,219	3,122	1,255	2,651	1,149	1,829	854	3,291	1,207	3,230	1,232
OTHER TIMBER:												
SOFTWOOD	--	2	--	2	--	--	--	--	--	2	--	2
HARDWOOD	--	317	--	303	--	326	--	231	--	365	--	291
TOTAL	--	319	--	305	--	326	--	231	--	367	--	293
BOTTOMLAND HARDWOOD TYPES:												
GROWING STOCK:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	--
HARDWOOD	4,472	1,183	--	--	5,401	1,502	--	--	--	--	4,015	1,027
TOTAL	4,472	1,183	--	--	5,401	1,502	--	--	--	--	4,015	1,027
OTHER TIMBER:												
SOFTWOOD	--	--	--	--	--	--	--	--	--	--	--	--
HARDWOOD	--	477	--	--	--	1,148	--	--	--	--	--	147
TOTAL	--	477	--	--	--	1,148	--	--	--	--	--	147
ALL TYPES:												
GROWING STOCK:												
SOFTWOOD	516	153	497	130	1,366	397	761	305	666	198	360	108
HARDWOOD	2,689	1,053	2,591	1,115	2,048	881	1,042	565	2,745	1,035	2,764	1,076
TOTAL	3,201	1,206	3,088	1,245	3,414	1,278	1,803	870	3,411	1,233	3,124	1,184
OTHER TIMBER:												
SOFTWOOD	--	9	--	6	--	21	--	83	--	9	--	7
HARDWOOD	--	297	--	300	--	344	--	181	--	337	--	268
TOTAL	--	306	--	306	--	365	--	264	--	346	--	275
ALL TIMBER	3,201	1,512	3,088	1,551	3,414	1,643	1,803	1,134	3,411	1,579	3,124	1,459

[1] ROUGH AND ROTTEN TREES.

TABLE 25.--*LAND AREA, BY CLASS, MAJOR FOREST TYPE, AND SURVEY COMPLETION DATE, 1957, 1966, AND 1977*

LAND USE CLASS	SURVEY COMPLETION DATE			CHANGE
	1957	1966	1977	1966-1977
	- - - - - - - - - ACRES - - - - - - - - -			
FOREST LAND:				
COMMERCIAL FOREST LAND:				
PINE AND OAK-PINE TYPES	362,600	463,871	436,705	- 27,166
HARDWOOD TYPES	2,382,400	2,529,175	2,576,387	+ 47,212
TOTAL	2,745,000	2,993,046	3,013,092	+ 20,046
NONCOMMERCIAL FOREST LAND:				
PRODUCTIVE-RESERVED	14,200	18,500	22,189	+ 3,689
UNPRODUCTIVE	70,700	16,608	1,225	- 15,383
TOTAL	84,900	35,108	23,414	- 11,694
NONFOREST LAND:				
CROPLAND	654,000	438,178	269,287	-168,891
PASTURE AND RANGE	1,231,000	1,054,209	1,176,479	+122,270
OTHER	79,000	268,925	305,018	+ 36,093
TOTAL	1,964,000	1,761,312	1,750,784	- 10,528
ALL LAND[1]	4,793,900	4,789,466	4,787,290	- 2,176

[1] EXCLUDES ALL WATER AREAS.

TABLE 26.--*VOLUME[1] OF SAWTIMBER, GROWING STOCK, AND ALL LIVE TIMBER ON COMMERCIAL FOREST LAND, BY SPECIES GROUP, DIAMETER CLASS, AND SURVEY COMPLETION DATE*

SPECIES GROUP	YEAR	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)								
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 AND LARGER
SAWTIMBER (IN THOUSAND BOARD FEET)											
SOFTWOOD	1957	796,339	--	--	158,677	175,214	118,808	83,129	43,037	64,579	152,895
	1966	898,344	--	--	212,072	186,622	151,067	123,055	72,914	54,033	98,581
	1977	1,553,968	--	--	293,186	327,330	313,772	202,595	150,129	81,205	185,751
HARDWOOD	1957	5,089,056	--	--	--	860,979	945,445	787,679	790,615	525,596	1,178,742
	1966	5,833,470	--	--	--	1,135,711	1,121,719	979,581	786,890	581,526	1,228,043
	1977	8,089,239	--	--	--	1,546,958	1,616,037	1,436,987	1,176,932	781,539	1,530,786
GROWING STOCK (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	254,564	31,357	53,528	44,900	41,256	24,436	15,780	7,692	11,144	24,471
	1966	305,119	43,311	65,293	60,009	43,942	31,071	23,359	13,032	9,324	15,778
	1977	459,666	45,180	80,880	82,968	77,066	64,537	38,457	26,833	14,014	29,731
HARDWOOD	1957	1,940,688	212,373	249,562	295,234	258,010	241,062	181,870	169,587	108,125	224,865
	1966	2,331,913	295,438	330,517	330,744	340,339	286,007	226,179	168,788	119,631	234,270
	1977	3,173,988	311,681	442,993	506,590	463,622	412,045	331,792	252,475	160,770	292,020
ALL LIVE TIMBER (IN THOUSAND CUBIC FEET)											
SOFTWOOD	1957	271,253	37,906	58,793	47,550	42,153	24,940	16,604	7,692	11,144	24,471
	1966	326,923	52,354	71,717	63,561	44,893	31,714	24,550	13,032	9,324	15,778
	1977	487,046	54,701	88,886	87,842	78,743	65,856	40,440	26,833	14,014	29,731
HARDWOOD	1957	2,495,828	313,067	336,648	379,575	317,456	287,699	218,302	198,671	133,400	311,010
	1966	3,007,497	435,517	445,851	425,230	418,740	341,339	271,473	197,757	147,601	323,989
	1977	4,067,890	460,690	597,435	651,097	570,611	491,872	398,155	295,779	198,338	403,913

[1] TO PROVIDE A BASIS FOR VALID COMPARISONS, ADJUSTMENTS HAVE BEEN MADE TO ALLOW FOR DIFFERENCES IN VOLUME TABLES AND SAWTIMBER SPECIFICATIONS USED IN PREVIOUS SURVEYS.

Sheffield, Raymond M.
1977. Forest statistics for the Southern Mountain Region of Virginia, 1977. USDA For. Serv. Resour. Bull. SE-42, 33 p. Southeast. For. Exp. Stn., Asheville, N. C.

The area of commercial forest land in this 17-county area has changed little since 1966. Softwood volume increased by 51 percent, hardwood by 36 percent. Hardwoods make up 87 percent of the growing-stock inventory. Annual timber removals were less than one-third the net annual growth. Mortality of growing stock reduced gross growth by 12 percent.

Keywords: Forest trends, commercial forest land, forest ownership, timber volume, timber growth, timber removals.

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U.S. Department of Agriculture - Forest Service
Southeastern Forest Experiment Station
Asheville, North Carolina

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U.S. Department of Agriculture
Forest Service Resource Bulletin SE-43

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February 1978

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Raymond M. Sheffield, Associate Resource Analyst

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INTRODUCTION

PURPOSE AND SCOPE

The present condition and future of the timber resource in the Coastal Plain of Virginia have caused increasing concern among resource planners, land managers, and citizens. Problems identified in past forest surveys contributed to this concern. This report focuses on some of the timber resource problems of the Coastal Plain by presenting forest resource trends, remedial actions taken to solve the problems identified, additional mensurational analyses of the data from the latest survey, and opportunities for improving present stand conditions. The findings of the latest survey of the Coastal Plain are included in "Forest Statistics for the Coastal Plain of Virginia, 1976" (Cost 1976). That report contains 26 detailed statistical tables and can be obtained from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.

IMPORTANCE OF THE FOREST RESOURCE

The forest resources of the Coastal Plain of Virginia are of vast importance to the people and economy of the entire State. Nearly 51,000 people are employed in timber-based manufacturing industries throughout Virginia (Virginia Department of Labor and Industry 1977). This statistic does not include employees in forest management and related fields, or government employees whose jobs are closely tied to the forest resource. A large number of people employed by forest industries work in the Coastal Plain, and more of Virginia's Forest Product Tax comes from that region than any other. For instance, more than 60 percent of the tax for softwood lumber originated in Coastal Plain counties in recent years. For hardwood lumber, over one-third of the tax was collected from mills located in Coastal Plain counties. As well as being a source of income, Coastal Plain forests also provide recreational opportunities for landowners and many others.

Forest industries in the Coastal Plain rely on regional woodlands, and those of adjacent areas, for their raw materials. An ample supply of pine timber is particularly important in producing lumber, plywood, and pulp. Southern pine's long fibers are necessary to the paper industry. These factors, coupled with the resource problems identified in previous surveys, have led to increasing concern among forestry leaders in Virginia.

TIMBER RESOURCE TRENDS

COMMERCIAL FOREST ACREAGE DECLINING

In 1940, when the first forest survey was conducted in the Coastal Plain of Virginia, the area of commercial forest land was increasing. This trend began many decades before 1940 (Cruikshank 1943). Commercial forests occupied 3.9 million acres in 1940 and increased by 148,000 acres during the following 16 years (table 1). The third survey in 1966 revealed a slight increase in commercial forest acreage, but this increase was due to reclassification of lands formerly considered as unproductive forest land; total forest land de-

clined during this period. A downward trend in forest land was confirmed by the fourth survey in 1976; commercial forest acreage declined by 2 percent between 1966 and 1976.

Table 1.--Land use areas, by land use class and survey completion date

Land-use class	Survey completion date			
	1940	1956	1966	1976
	- - - - - Thousand acres - - - - -			
Forest land:				
Commercial forest	3,919.2	4,067.1	4,079.3	4,003.5
Noncommercial forest[1/]	24.6	48.9	20.1	71.8
Total	3,943.8	4,116.0	4,099.4	4,075.3
Agricultural land:				
Cropland[2/]	1,766.5	1,444.2	1,305.3	1,190.9
Pasture	150.5	153.6	155.9	147.7
Total	1,917.0	1,597.8	1,461.2	1,338.6
Other nonforest[3/]	502.1	574.9	711.2	831.0
Water	506.2	580.4	597.3	624.2
Total area	6,869.1	6,869.1	6.869.1	6,869.1

1/ Includes unproductive forest land and productive-reserved forest land.
2/ Includes idle farmland.
3/ Includes urban areas, marsh, and other farmsteads.

The changes in forest area can be interpreted by studying the land use trends for Coastal Virginia. Between 1940 and 1956, total agricultural land declined by 319,000 acres, resulting in large increases in forest land, other nonforest land, and areas classified as water. The rate of decline in agricultural lands slackened between 1956 and 1966, and this trend continued through 1976. This decline resulted in fewer acres reverting to forest land. During this same period, other nonforest lands, primarily urban areas, continued to increase at rapid rates. The result was a reduction in forest land in the third and fourth surveys. This trend is likely to continue in the near future if present patterns in land use continue.

NONFARM OWNERSHIPS INCREASING

The changes in land use in Coastal Virginia during the past 20 years are reflected in changed ownership patterns (table 2). Commercial forests held by miscellaneous private owners have increased by over 1 million acres; farmer-owned forest land declined by over 1 million acres during the same period.

Table 2.--Area of commercial forest land, by ownership class and survey completion date

Ownership class	Survey completion date[1/]		
	1956	1966	1976
	- - - - Thousand acres - - - -		
Public	116.0	131.3	146.2
Forest industry[2/]	758.6	758.8	768.9
Farmer	2,813.2	1,857.0	1,650.4
Miscellaneous private	379.3	1,332.2	1,438.0
All owners	4,067.1	4,079.3	4,003.5

1/ 1940 data omitted because of differences in sources of data and changes in definitions.
2/ Includes lands under long-term lease.

Marginal farmland and, in some cases, entire farms were abandoned and reverted to forest land. In many instances, farmland owners were reclassified as miscellaneous private owners or sold their land to such individuals.

Forest industries have increased their forest-land holdings by only 1 percent during the past 20 years. Holdings by public agencies have increased by 26 percent.

SOFTWOOD INVENTORY DECLINING

Trends in net volume of growing stock and the sawtimber portion of growing stock differ significantly by species group (tables 3 and 4). Softwood growing stock and sawtimber have continuously declined in volume since 1940, whereas hardwood growing stock and sawtimber have continuously increased in volume over the same period.

In 1940, volume of softwood growing stock totaled 2.6 billion cubic feet. This volume declined slightly between 1940 and 1956, but it fell by 8 percent between 1956 and 1966; and, in the next 10 years, it fell another 2 percent. In general, trends in volume of the sawtimber portion of growing stock follow the trends for all growing stock. However, softwood sawtimber volume declined proportionally more than did that of softwood growing stock between 1940 and 1956. This decline reflects a high production of softwood lumber for that period. Furthermore, the use of smaller diameter trees for pulpwood was lower than in more recent years.

Table 3.--The total and per-acre volume[1/] of growing stock on commercial forest land, by species group and survey completion date

Species group	Total net volume				Net volume per acre			
	Survey completion date				Survey completion date			
	1940	1956	1966	1976	1940	1956	1966	1976
	Million cubic feet				Cubic feet			
Softwood	2,638.2	2,636.7	2,420.6	2,383.1	673	648	593	595
Hardwood	2,467.4	2,860.7	2,953.1	3,196.4	630	703	724	798
Total	5,105.6	5,497.4	5,373.7	5,579.5	1,303	1,351	1,317	1,393

1/ To provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used in surveys prior to 1976.

Table 4.--The total and per-acre volume[1/] of sawtimber on commercial forest land, by species group and survey completion date

Species group	Total net volume				Net volume per acre			
	Survey completion date				Survey completion date			
	1940	1956	1966	1976	1940	1956	1966	1976
	Million board feet				Board feet			
Softwood	8,897.3	8,571.6	8,543.2	8,372.1	2,270	2,108	2,094	2,091
Hardwood	7,068.1	8,050.3	8,148.9	8,923.8	1,803	1,979	1,998	2,229
Total	15,965.4	16,621.9	16,692.1	17,295.9	4,073	4,087	4,092	4,320

1/ To provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used in surveys prior to 1976.

Trends in volume per acre provide a volume estimate without the influence of a changing commercial forest land base. The trends in softwood volume per acre are basically the same as those for softwood net volume, with one exception—volume of softwood growing stock per acre for 1976 increased slightly from the 1966 level, signifying some improvement in the past 10 years. Net volume of softwood growing stock declined during this period because of fewer commercial forest acres.

In contrast to softwoods, hardwoods have increased in volume in every survey since 1940. Volume of hardwood growing stock increased nearly 30 percent during this period, with the sawtimber portion of growing stock increasing by 26 percent. Per-acre hardwood volumes also registered significant gains with each successive survey.

SOFTWOOD REMOVALS EXCEED NET GROWTH

The relationships between net growth and removals are important in analyzing the timber resource of a particular region over a period of time. Such relationships in the Coastal Plain of Virginia generally correspond to the trends in inventory, with removals exceeding net growth during periods of declining inventory (tables 5 and 6). For softwoods, net annual growth of growing stock in 1940 exceeded removals, but this relationship deteriorated until 1966, when removals exceeded net growth by 34 percent. This growth deficit resulted largely from the high production of softwood pulpwood prior to 1966. In 1976, the fourth survey revealed improvement—growing-stock removals exceeded net growth by 8 percent. Relationships between net growth and removals for softwood sawtimber followed the general trends for growing stock, with one exception—the sawtimber growth deficit worsened in 1976.

With hardwoods, these relationships for both growing stock and the sawtimber portion of growing stock have been favorable throughout the period 1940-76. Hardwood growth surpluses correspond to the increasing hardwood inventory during this period.

Table 5.--Net annual growth and removals of growing stock on commercial forest land, by species group and survey completion date[1/]

Species group	Net annual growth				Annual timber removals			
	Survey completion date				Survey completion date			
	1940	1956	1966	1976	1940	1956	1966	1976
	Million cubic feet							
Softwoods	125.7	107.6	96.3	103.6	112.6	112.6	129.1	111.6
Hardwoods	83.0	98.1	98.3	136.8	32.1	81.2	93.5	95.6
Total	208.7	205.7	194.6	240.4	144.7	193.8	222.6	207.2

1/ In some cases, 1956 and 1966 volumes have been adjusted on the basis of subsequent survey findings.

Table 6.--Net annual growth and removals of sawtimber on commercial forest land, by species group and survey completion date[1/]

Species group	Net annual growth				Annual timber removals			
	Survey completion date				Survey completion date			
	1940	1956	1966	1976	1940	1956	1966	1976
	Million board feet							
Softwoods	512.9	425.3	423.9	415.4	501.3	460.7	428.1	463.6
Hardwoods	235.7	317.6	319.5	466.5	104.6	277.5	321.0	322.4
Total	748.6	742.9	743.4	881.9	605.9	738.2	749.1	786.0

1/ In some cases, 1956 and 1966 volumes have been adjusted on the basis of subsequent survey findings.

VIRGINIA'S RESPONSE TO THE SOFTWOOD GROWTH DEFICIT

After the large deficit in softwood growth was identified in 1966, forest industries and the Virginia Division of Forestry responded by developing plans to remedy the problem. The remedy of each group was different. Forest industry's actions provided a more immediate result, while the State of Virginia enacted legislation intended to provide a long-term solution. This legislation encompassed the entire State and was not limited to the Coastal Plain. However, since most of the softwood growth deficit for the entire State was in the Coastal Plain, the timber situation there greatly influenced the policies adopted.

FOREST INDUSTRY'S RESPONSE

Reduced Harvesting of Softwoods in the Coastal Plain

Forest industry reacted to the growth deficit with an immediate and continuous reduction in harvesting of softwood growing stock from Coastal Plain forests. At the same time, harvesting of hardwood growing stock gradually increased. These changes are exemplified by the pulp and paper industry's procurement of wood after 1966 (figs. 1 and 2). In 1966, pulpmills in Coastal Virginia began to decrease the volume of softwood roundwood removed from the region. The latest pulpwood data available indicate that this trend has continued through 1975. By 1975, receipts of softwood roundwood from the Coastal Plain were down by 67 percent in comparison to the 1965 level, and those of hardwood roundwood from the same region were up by 41 percent.

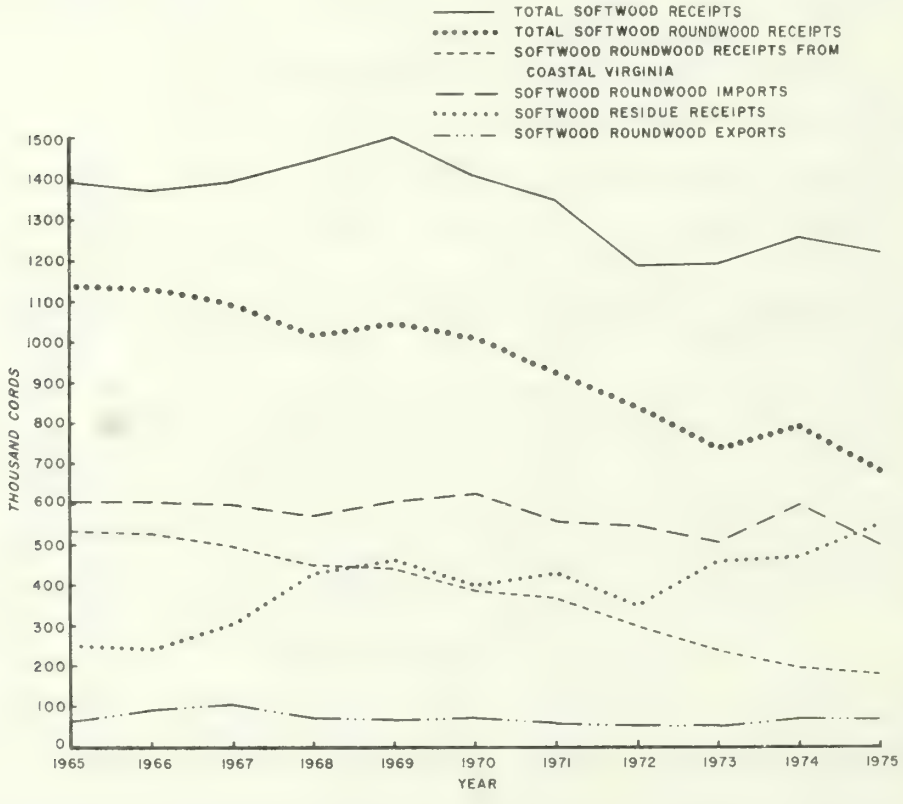

Figure 1.—Softwood receipts by Coastal Virginia pulpmills, by type and source, with roundwood exports to other regions 1965-75.

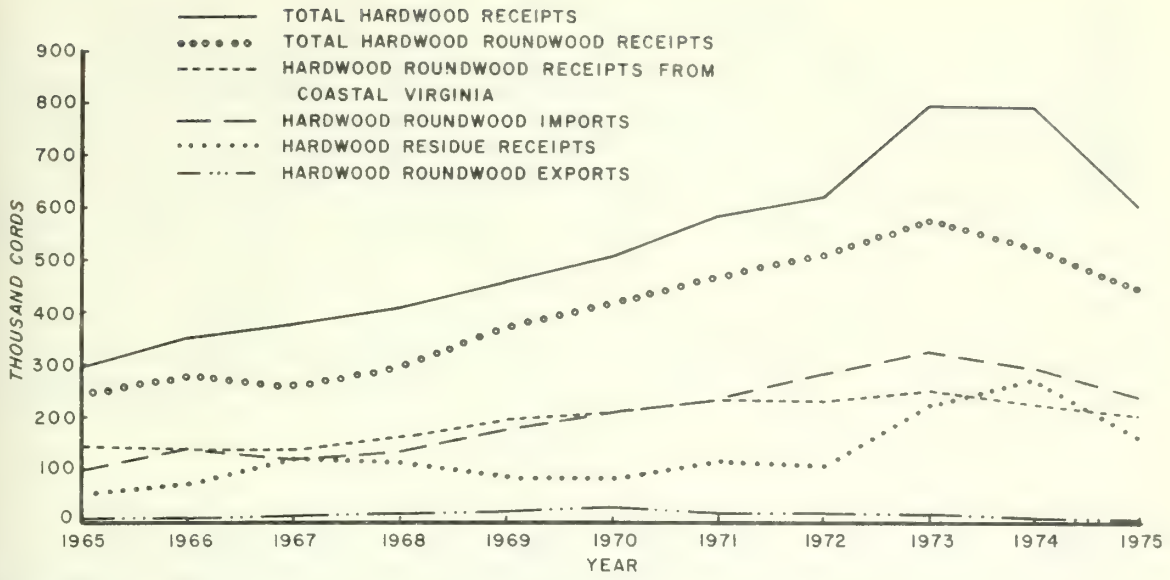

Figure 2.—Hardwood receipts by Coastal Virginia pulpmills, by type and source, with roundwood exports to other regions, 1965-75.

In order to operate their mills at normal capacity, the pulpwood-using industry had to obtain additional raw material. Since softwoods are the predominant species used in the pulping process, other sources of raw material had to be found. The additional raw materials were obtained from three sources: (1) imports of softwood roundwood from outside sources; (2) increased use of hardwoods in the pulping process; and (3) increased use of softwood and hardwood residues.

Importing Softwood Roundwood

Although imports of softwood roundwood increased after 1965, the most striking change was in the percentage of total softwood imported. In 1965, pulpmills in Coastal Virginia relied on imported roundwood from other regions for 53 percent of their softwood roundwood receipts. By 1975, other regions supplied 74 percent of such receipts.

Areas adjacent to the Coastal Plain of Virginia supplied this increased volume (fig. 3). Beginning in 1966, pulpmills in the Coastal Plain gradually reduced the volume of softwoods obtained from Coastal Plain and Piedmont forests in Virginia. At the same time, they began to expand wood procurement in the Coastal Plain and Piedmont of North Carolina, Maryland, Delaware, South Carolina, and Georgia. This trend continued until about 1971, when the volume of softwood pulpwood originating in the Piedmont of Virginia began to increase. Dependence upon North Carolina and other states as sources for such wood declined slightly after 1970. In the period 1973-75, more softwood pulpwood was obtained from the Southern Piedmont of Virginia than from the Coastal Plain. Yet, even though mills increased the amount of imported softwoods, total receipts of softwood roundwood by Coastal Plain mills declined between 1965 and 1975.

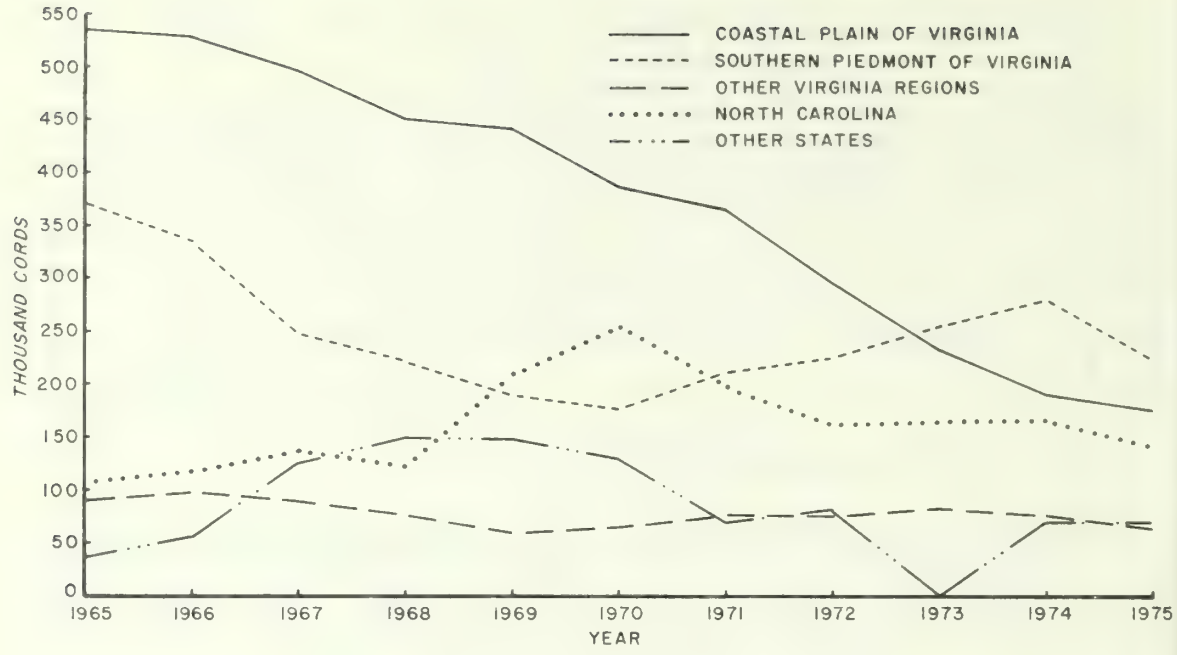

Figure 3.—Softwood roundwood receipts by Coastal Virginia pulpmills, by source, 1965-75.

Increased Use of Hardwoods

By increasing the use of hardwoods, most mills continued to operate at normal capacity. Although limited by the short fibers in hardwoods, pulpmills increased their hardwood roundwood receipts from 244,000 cords in 1965 to 577,000 cords in 1973. This increased hardwood volume came from the same areas where most of the softwood roundwood was obtained (fig. 4).

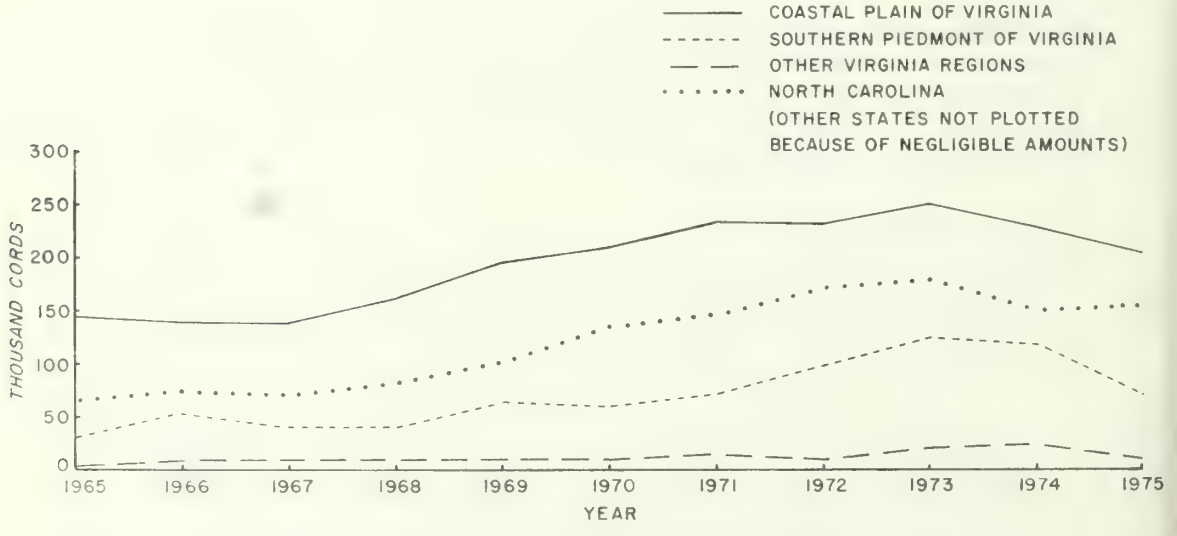

Figure 4.—Hardwood roundwood receipts by Coastal Virginia pulpmills, by source, 1965-75.

Increased Use of Wood Residues

The increased use of wood residues, a common trend throughout the United States, also played an important role in counteracting the reduced consumption of softwood roundwood. In 1975, receipts for residues, both softwood and hardwood, represented a 134 percent increase over the 1965 level. This trend reflects the improved utilization of raw materials at sawmills and other wood product plants. Most of the residues were obtained from Virginia and North Carolina mills.

As a result of the utilization of wood residues, imported softwood, and local and imported hardwood, receipts of all wood by pulpmills in Coastal Virginia increased substantially between 1965 and 1975.

Exporting Roundwood

The volume of softwood roundwood exported from Coastal Plain forests to other regions could alter the effectiveness of plans for improving the timber resource. Roundwood exports have been small in comparison with imports and, in general, have declined at a rate proportional to the decline in harvesting of softwood growing stock from Coastal Plain forests.

Results of Forest Industry's Actions

Forest industry's actions over the past 10 years helped reduce the large softwood growth deficit found in 1966. As already noted, the deficit of softwood growing-stock growth in 1976 was much less than in 1966.

It would be difficult to determine how changes in the industry's wood procurement have affected each area of wood supply, since interactions involve different regions and states. However, as of the most recent surveys, softwood growth deficits have been identified and softwood inventory volume has declined in Delaware, Maryland, and the Northern Coastal Plain of North Carolina (Ferguson 1967); Ferguson and Mayer 1974; Welch and Knight 1974). Increased softwood procurement in these areas might not be feasible over an extended period.

THE STATE OF VIRGINIA'S RESPONSE

In response to the softwood growth deficit identified in 1966, Virginia forestry leaders began to strengthen an existing law and formulate a new one. The resulting legislation—the amended Virginia Seed Tree Law and the Reforestation of Timberlands Act—works together to form the State of Virginia's reforestation policy.

Virginia's Seed Tree Law

The original Law required landowners harvesting timber to leave four pine seed trees per acre wherever loblolly, shortleaf, pond, or white pine constituted 10 percent of the live trees 6 inches or more in diameter at stump height. Wherever yellow-poplar contributed to stocking of trees 6 inches or larger in diameter, the Law required that two yellow-poplars be left. Seed trees had to be 14 inches or larger in diameter.

After the 1966 survey findings, it became apparent that the Seed Tree Law was not sufficient to provide adequate regeneration on cutover lands. The Law was subsequently revised to increase the requirements for pine seed trees to eight pines 14 inches or larger in diameter per acre. If no pines 14 inches in diameter are present, the Law requires that two of the largest existing trees of the same species be left in place of each 14-inch or larger pine. In 1972, another revision specified that yellow-poplar stocking on acres where the Law would apply be raised to 10 percent—the same as pine stocking. At present, a landowner is not required to leave seed trees if he carries out an alternate reforestation plan approved by the State Forester.

Virginia's Reforestation of Timberlands Act

Shortly after the 1966 Virginia Survey, the State Forester called together forest industry leaders and interested landowners to discuss the softwood growth deficit and develop a solution to the problem. The Pine Reforestation Action Committee was formed and, after several public meetings, the Committee requested the 1969-70 General Assembly to enact remedial legislation. The result was the Reforestation of Timberlands Act.

The purpose of the Reforestation of Timberlands Act is to reforest former pine-growing land that is currently growing only noncommercial and low-quality hardwoods. Financial assistance is provided to private landowners for the reforestation of lands where pine or yellow-poplar constitutes less than 10 percent of the stand. In stands where pine and yellow-poplar comprise as much as 10 percent, the Seed Tree Law applies.

The Division of Forestry is authorized, upon the request of a landowner, to examine the timberland and provide State-owned equipment, seedlings, and other materials necessary for preparing and reforesting the land with pine. The landowner may also use his own equipment and materials, or he can hire contractors to prepare and reforest the land. He may receive incentive payments of up to 50 percent of the total cost of the project, not to exceed a set per-acre value. Another option allows the landowner to receive up to 75 percent of the total cost of the project if he takes a 30-year lien plus an interest-free loan on the reforested land.

This Act was funded by increasing the forest product tax on pine products by approximately 400 percent. This increase was recommended by the pine-using forest industries, a testimony to their concern over the pine timber supply. The State matches the product-tax revenue with monies from the General Fund.

The goal of the Reforestation of Timberlands Act is to overcome the financial barriers to intensive forest management for the private nonindustrial landowners. Only 5 years have passed since this Act became effective, yet already there is evidence that it is accomplishing its designated goal. An increased rate of forest plantings on nonindustrial private ownerships since 1971 indicates that the cost-sharing incentives are helping some landowners overcome the financial barriers (table 7). Most of these landowners are located in the Coastal Plain and Southern Piedmont of Virginia (Horton 1976).

Table 7.--Acres of forest planting,[1/] by ownership class, Virginia

Fiscal year	Ownership class				All owners
	National Forest	Other public	Forest industry	Other private	
	Acres				
1965	1,424	1,312	42,377	28,689	73,802
1966	2,418	1,707	35,039	25,603	64,767
1967	2,748	1,412	43,963	26,797	74,920
1968	2,038	904	36,636	24,590	64,168
1969	2,006	1,286	41,381	25,706	70,379
1970	1,364	1,387	38,493	27,461	68,705
1971	1,804	2,472	35,072	32,539	71,887
1972	2,157	2,833	39,750	53,087	97,827
1973	1,511	3,966	30,419	47,559	83,455
1974	1,530	2,303	27,338	51,618	82,789
1975	1,407	2,449	24,849	59,218	87,923

1/ Includes acres planted by direct seeding.
Source: U.S. Department of Agriculture, Forest Service, Forest and Windbarrier Planting and Seeding in the United States. Issued annually by the Forest Service in Washington, D. C. In 1974, the title of the series was changed to: Forest Planting, Seeding, and Silvical Treatments in the United States.

STAND-AGE DISTRIBUTION OF COASTAL PLAIN FORESTS

The distribution of commercial forest acreage by stand-age class and major forest type provides a new way to evaluate the forest resource. Stand-age distributions reflect past land use trends, forestry practices, and problem areas within the forests. In addition, stand-age data can be used to estimate short-term trends in the timber supply.

During the fourth survey of the Coastal Plain of Virginia in 1976, each sample location was assigned a stand age on the basis of the average age of representative trees in the manageable stand. These data permitted the formation of age profiles by ownership class, forest type, and other area and management classifications. Areas classified as not having a manageable stand were omitted from the age groups since many of these acres had few growing-stock trees. These acres, however, were profiled to provide a comparison with the various age classes.

Age profiles by softwood and hardwood forest types were compiled for all Coastal Plain stands (fig. 5). The softwood types included areas where southern yellow pines or cedars, singly or in combination, comprised 50 percent or more of the stocking. Cypress, although a softwood species, was included with hardwoods according to the conventional separation of forest types. The oak-pine type was also included with hardwoods because, by definition, hardwood species comprise 50 percent or more of the stocking in this type.

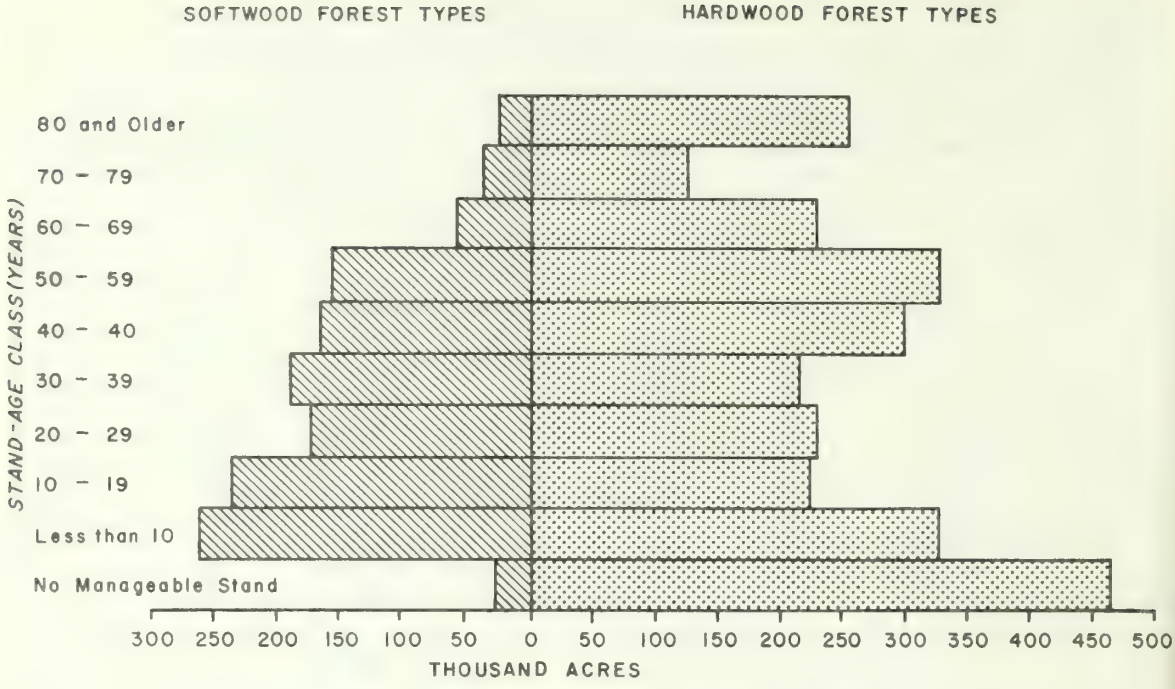

Figure 5.—Area of commercial forest land occupied by softwood and hardwood forest types, by stand-age class, Coastal Plain of Virginia, 1976.

RELATION TO PAST LAND USE, FORESTRY PRACTICES, AND PROBLEM AREAS

Stand-age profiles reflect past land use trends and forestry practices in the area. Knight (1977) showed that a strong relationship existed between the reduction in cropland acreage in past years and the present acreage in each softwood age class in North Carolina. Abandonment of marginal farmland accounted for the reductions in cropland acreage. Many of the abandoned acres seeded in with southern yellow pines, or were planted with pines, and are now the source of much of the softwood timber in North Carolina. Similar trends in reduction of cropland acreage have occurred in Virginia (Boyce and others 1975). Much of Coastal Virginia's softwood timber probably originated on abandoned farmland.

The rate of cropland retirement and subsequent reversion to forest has recently decreased throughout most of the South (Boyce and others 1975). This trend is also occurring in the Coastal Plain of Virginia. A continued rotation between cropland and forest is expected, but at a much lower scale than in past years. Without the reversion of large acreages of abandoned farmland, the harvesting of the older softwood forests will result in reductions in softwood forest types unless adequate pine regeneration after harvest is achieved.

The acreage of softwood types in the two youngest classes—"less than 10 years" and "10 to 19 years"—reflects the pine planting efforts of the past 20 years. Pine plantations accounted for nearly three-fourths of the softwood stands less than 10 years old and for 57 percent of those 10 to 19 years old.

Hardwood stands, unlike softwoods, originate largely as a result of timber harvesting. Knight (1977) showed that a relationship existed between past lumber production in North Carolina and the acreage of hardwood types by stand-age class. The number of acres harvested and the lumber production for a given year were assumed to be related. Generally, even-aged hardwood stands become established on the cutover land. Similar relationships between past levels of lumber production and hardwood acreages, by stand age, probably exist for Coastal Virginia.

A healthy increase in the acreage of the youngest hardwood age class over that of most older hardwood stands is evident. The acreage in this "less than 10" age class exceeds that in the older classes because 86,000 acres of pine plantations were included in the youngest class. These plantations were classified as hardwoods either because of poor survival of pine seedlings, or because they contained more hardwood than pine. Future competition for growing space, water, and available nutrients may transform some of these acres to pine types. However, hardwood encroachment in pine plantations established on harvested stands is likely to be a continuing problem. An examination of forest types on old-field plantations reveals that there is no hardwood problem after pine is planted on abandoned fields, but old-field plantings have declined substantially since the expiration of the Conservation Reserve Soil-Bank Program. Thus, most pine plantations are now established on cutover forest land, and severe hardwood competition usually occurs unless there is intensive site preparation.

The large accumulation of mature and overmature hardwood stands reflects the long hardwood rotations and a shortage of hardwood markets. Adverse conditions limit forestry operations on some acres. Another factor leading to accumulation of mature stands is that some landowners are unwilling to sell their timber.

Hardwoods dominated nearly 463,000 acres classified as having no manageable stand. About 43 percent of these stands have not been disturbed during the past 10 years. Therefore, the conditions in these stands are not likely to improve without intervention from man. Further buildup in this class will occur unless harvested stands are adequately regenerated.

STAND-AGE DISTRIBUTION BY OWNERSHIP

Age profiles for each broad ownership class reveal significant differences in the forest lands of each group of owners (figs. 6 and 7). Owner attitudes, management objectives, and financial status all contribute to these differences.

Forest industry's lands are generally managed on short rotations for pine. This management is reflected in the profiles for softwood and hardwood types. Over 54 percent of forest industry's softwood stands are less than 20 years old; 80 percent of these stands are pine plantations. Forest industry's stands are younger than those of any other ownership class, averaging 27 years for softwood types and 39 years for hardwood types. Yet, substantial acreages of both pine and hardwood remain available for future harvest by industry. Some portion of this acreage is owned by lumber companies who may not manage their lands on short rotations, as do most pulp and paper companies.

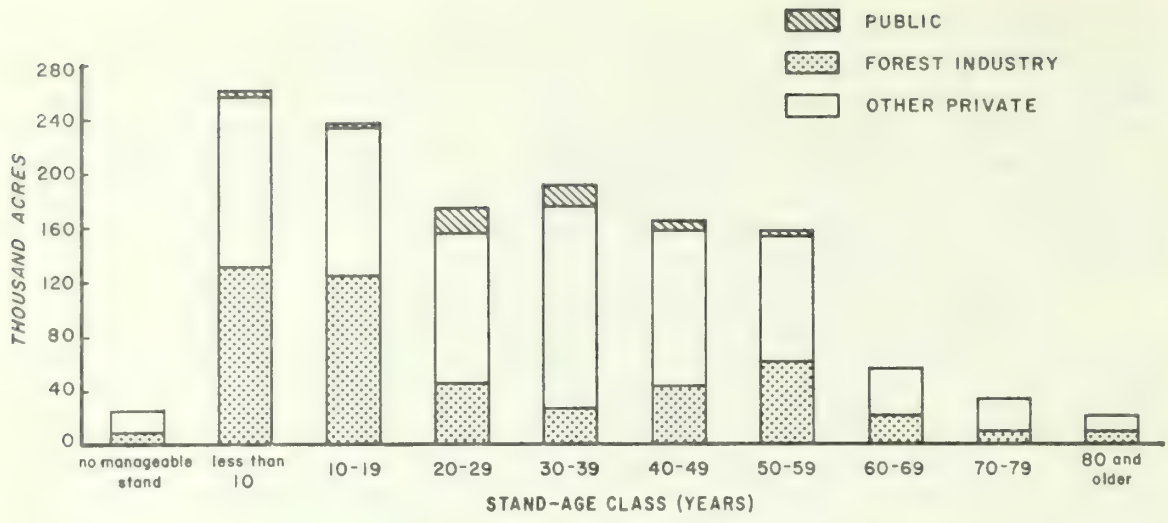

Figure 6.—Total area of commercial forest land occupied by softwood forest types, by stand-age and ownership class, Coastal Plain of Virginia, 1976.

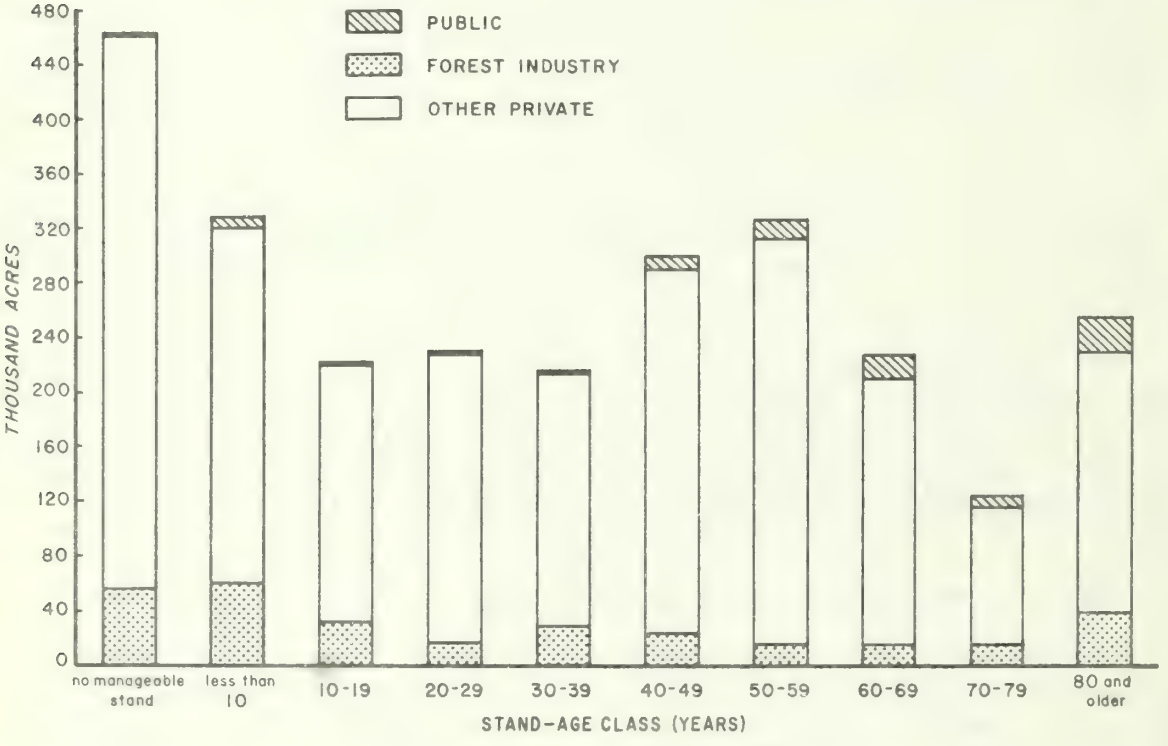

Figure 7.—Total area of commercial forest land occupied by hardwood forest types, by stand-age and ownership class, Coastal Plain of Virginia, 1976.

Publicly owned forests are used for many purposes other than timber production. Age profiles for public forests reflect this multiple use. Older, predominantly hardwood forests accumulate when timber production is not the primary goal. For instance, public hardwood forests average 60 years in age, whereas the overall average age for hardwood forests is 43 years.

The other group of private owners includes those whose management practices range from none to the most intense. The problems private, nonindustrial landowners have faced in practicing intensive management are exemplified by the acreage of their forest land without a manageable stand. Nearly 87 percent of all stands so classified are located on private, nonindustrial woodlands. Failure to achieve adequate regeneration after harvest led to this poor stocking.

Whatever the reason for the lack of regeneration after harvesting—be it lack of concern, knowledge, or financial resources—improved management of private woodlands is a must in Virginia and throughout the Southeast. In Virginia, the Reforestation of Timberlands Act was designed to achieve this goal, and evidence that improvement is underway has been shown. The age profile for softwoods held by nonindustrial, private owners provides additional evidence to substantiate this improvement. The greater acreage in the "less than 10" age class, in comparison with that of the next two older classes, is particularly significant because of the reduced rate of reversion of idle farmland to forest during the past 10 years. With continued concern and landowner participation, the Reforestation of Timberlands Act can accomplish its long-term goals.

PREDICTING SHORT-TERM TIMBER SUPPLIES

Stand-age data are valuable in predicting the relative acreage of softwood and hardwood forests available for harvest now and in the near future. The age profile for softwoods indicates an increase in softwood acreage and, consequently, in volume likely to become available for harvest after the next decade. These stands are assumed to be harvestable at age 30. Pine plantations in the two youngest age classes account for most of this projected increase in harvestable softwood acreage.

The profile for hardwoods shows a buildup of acreage in the older age classes. Because adverse sites limit availability on only 5 percent of all Coastal Plain stands, most hardwood stands in this region should be available for harvest now or in the future, assuming that all landowners will eventually be willing to sell their timber. The hardwood inventory, growth surplus, and age profile all attest that hardwoods offer the best opportunity for increasing the volume cut from Coastal Plain forests.

TIMBER MANAGEMENT OPPORTUNITIES

Each sample plot in the Coastal Plain of Virginia was assessed to determine if treatment would be needed in the next 10 years to improve stand conditions. Factors considered included stand volume and stocking, species composition, stand age, mortality, and site quality. The acreages to which these potential treatments were assigned were compiled according to broad management and ownership classes (table 8).

POOR AND ADVERSE SITES

To adequately evaluate the opportunities for intensive timber management, we must first exclude certain areas as being unsuitable. In Coastal Virginia, these unsuitable areas include poor sites (Site Class 5) and those with

Table 8.--Area of idle cropland and commercial forest land, by broad management, ownership, and treatment opportunity classes, Coastal Plain of Virginia, 1976

Broad management and ownership classes[1]	Total area	Broad treatment opportunity classes							
		Salvage	Harvest	Commercial thinning	Other stand improvement	Stand conversion[2]	Regeneration	Good condition	Poor management potential[3]
	Acres								
Idle cropland:									
Public	--	--	--	--	--	--	--	--	--
Forest industry	--	--	--	--	--	--	--	--	--
Other private	50,133	--	--	--	--	--	50,133	--	--
Total	50,133	--	--	--	--	--	50,133	--	--
Nonstocked forest:									
Public	1,166	--	--	--	--	--	--	--	1,166
Forest industry	21,135	--	--	--	--	--	6,041	--	15,094
Other private	30,356	--	--	--	--	--	11,840	--	18,516
Total	52,657	--	--	--	--	--	17,881	--	34,776
Pine plantations:									
Public	3,832	--	--	--	--	--	--	3,832	--
Forest industry	213,130	--	--	34,342	17,485	--	--	158,895	2,408
Other private	129,996	--	--	25,330	5,831	--	--	95,407	3,428
Total	346,958	--	--	59,672	23,316	--	--	258,134	5,836
Natural pine stands:									
Public	49,524	--	--	25,416	2,162	--	--	21,946	--
Forest industry	250,050	22,893	19,427	25,578	28,466	5,382	--	139,210	9,094
Other private	653,182	12,727	51,274	114,318	50,155	8,657	8,689	371,142	36,220
Total	952,756	35,620	70,701	165,312	80,783	14,039	8,689	532,298	45,314
Oak-pine stands:									
Public	18,945	--	6,300	3,832	1,827	--	--	6,986	--
Forest industry	115,411	--	6,350	--	19,648	7,331	9,700	72,382	--
Other private	577,649	5,887	42,399	3,050	61,958	35,687	20,427	354,322	53,919
Total	712,005	5,887	55,049	6,882	83,433	43,018	30,127	433,690	53,919
Upland hardwood stands:									
Public	62,046	--	20,983	--	--	1,680	2,713	36,670	--
Forest industry	130,174	--	26,587	--	2,981	14,688	24,356	49,026	12,536
Other private	1,344,618	2,762	139,298	5,528	121,185	150,700	206,501	561,452	157,192
Total	1,536,838	2,762	186,868	5,528	124,166	167,068	233,570	647,148	169,728
Bottomland hardwood stands:									
Public	10,724	--	1,669	--	--	--	210	8,080	765
Forest industry	38,995	--	10,278	--	2,034	2,975	2,305	12,367	9,036
Other private	352,606	--	42,685	--	15,565	5,585	39,819	117,373	131,579
Total	402,325	--	54,632	--	17,599	8,560	42,334	137,820	141,380
All classes:									
Public	146,237	--	28,952	29,248	3,989	1,680	2,923	77,514	1,931
Forest industry	768,895	22,893	62,642	59,920	70,614	30,376	42,402	431,880	48,168
Other private	3,138,540	21,376	275,656	148,226	254,694	200,629	337,409	1,499,696	400,854
Total	4,053,672	44,269	367,250	237,394	329,297	232,685	382,734	2,009,090	450,953

1/ Forest industry includes lands under long-term lease.
2/ Areas occupied with species unsuitable to the site from the standpoint of timber production.
3/ Areas where the timber management potential is severely limited because of poor or adverse sites.

year-round water problems. Altogether, such areas total over 450,000 acres. The following analysis assumes that funds for timber management should not be expended on these acres because of low yields on the poor sites and poor operability on the adverse sites.

STANDS IN GOOD CONDITION

Another type of site that should be excluded from potential treatment is the 2 million acres (56 percent of the commercial forest land) already supporting stands in relatively good condition. By ownership class, the proportion ranges from 54 percent of all publicly owned commercial forests to 60 percent of all lands controlled by forest industry. These acres are in good enough condition that intensive management to increase timber yields during the next decade would not be beneficial. The remaining acreage exclusive of that on poor or adverse sites, however, could be improved by intensive management during the next 10 years.

STANDS THAT WOULD BENEFIT FROM TREATMENT

Conditions on the remaining 1.6 million acres range from heavily damaged stands in need of salvage to poorly stocked stands requiring artificial regeneration. Recommended treatments for the various types of stands in these categories and the acreages involved are summarized below.

Stand Liquidation

Stand liquidation and subsequent regeneration are needed on approximately 412,000 acres. Some of these stands need to be harvested because they have reached or passed maturity; others need to be salvaged because of serious damage from insects, diseases, and weather. In the stands assigned these two treatments, mortality was more than double the overall average, indicating that further volume losses will occur unless action is taken.

Intermediate Treatments

Stands on 237,000 acres could be commercially thinned. These areas support dense stands of merchantable but immature timber. Such stands consist primarily of pine types, both planted and natural. An additional 329,000 acres were assigned treatments such as precommercial thinning, cleaning, release, or other intermediate cutting. Precommercial thinning was assigned primarily to stands where growth losses are likely because of a dense stocking of seedlings or saplings. Cleaning, release, or other intermediate cutting was assigned to stands with sufficient stocking for management but which are receiving serious competition from rough or rotten trees and other inhibiting vegetation. Altogether, intermediate treatment would enhance growth on an estimated 567,000 acres.

Stand Conversion

Stand conversion could potentially benefit 233,000 acres of commercial forest land. Such conversion is needed when the present species composition is incompatible with the site from the standpoint of timber production. Most such stands consist of low-quality hardwoods growing on sites suitable for pine.

Artificial Regeneration

The most promising opportunity to improve stand conditions and increase future timber supplies in Coastal Virginia is artificial regeneration of existing, poorly stocked, commercial forest land. An estimated 383,000 acres are so poorly stocked that they do not support manageable stands. These acres are characterized by low volumes per acre and a higher-than-average stocking because of the presence of rough and rotten trees and other inhibiting vegetation. However, artificial regeneration of these stands is not financially attractive except immediately after harvest, when the landowner is likely to have sufficient funds available. Conditions in these areas probably will not improve without intervention from man. By ownership class, the percentage of commercial forests suitable for intensive management but needing regeneration ranges from 2 percent of all public forest land to 12 percent of all private, nonindustrial forests.

Landowners should also be encouraged to plant pines on over 50,000 acres of idle cropland. In old-field plantations, the costs of site preparation and planting are low and competition from hardwoods is not severe.

OPPORTUNITIES FOR MORE IMMEDIATE IMPROVEMENT

Although the stand treatments discussed are valid methods of improving the timber resource, the benefits derived are not immediate. Additional opportunities exist for more immediate improvement.

One possibility is to increase the utilization of mill and logging residues. Since most larger mills already utilize their residues, further increases in such use may be limited. However, an opportunity exists for more complete utilization of logging residues such as rough and rotten trees and treetops, thereby allowing more wood to be consumed without increasing removals of growing stock. Total-tree chipping is another way to increase the utilization of previously unmerchantable wood.

Finally, increased use of hardwoods to the extent allowed by present technology would decrease the demand for softwoods. In many instances, such an increase may be limited by the poor quality of existing hardwoods, but advances in technology will undoubtedly allow greater hardwood utilization in the future.

CONCLUSIONS

In-depth analysis of the timber supply in the Coastal Plain of Virginia reveals a declining forest land base and softwood inventory and unfavorable relationships between growth and removals of softwoods. These trends, however, do not imply a lack of progress in recent years. On the contrary, the data show that there has been improvement. Yet, if Coastal Virginia is to provide the increasing amounts of wood that will be required in the future, additional progress will be necessary.

Furthermore, while timber requirements are rising, nontimber uses and benefits of the forest are becoming increasingly important. Today's forest management practices are being evaluated for their effects on recreational uses, wildlife habitat, and water quality. Forest managers must be aware of the many nontimber resources of the forests. The ultimate challenge in forest management is to meet both the timber requirements and the needs of other forest users in future years.

APPENDIX

DEFINITIONS OF TERMS

Basal area.—The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet or basal area per acre.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Cropland.—Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Farm.—Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.—A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.—Lands owned by farm operators.

Forest industry lands.—Lands owned by companies or individuals operating wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.—A classification of forest land based upon the species forming a plurality of live-tree stocking.

White-red-jack pine.—Forests in which eastern white pine, red pine, or jack pine, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, aspen, birch, and maple.)

Spruce-fir.—Forests in which spruce or true firs, singly or in combination, comprise a plurality of the stocking. (Common associates include white cedar, tamarack, maple, birch, and hemlock.)

Longleaf-slash pine.—Forests in which longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking, but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.—Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.—Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.—Forests in which elm, ash, or cottonwoods, singly or in combination, comprise a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Maple-beech-birch.—Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

Gross growth.— Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.—Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.—Soft-textured hardwoods, such as boxelder, red and silver maple, hackberry, loblolly-bay, sweetgum, yellow-poplar, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.—Hard-textured hardwoods, such as Florida and sugar maple, birch, hickory, dogwood, persimmon (forest grown), beech, ash, honeylocust, holly, black walnut, mulberry, all commercial oaks, and black locust.

Idle farmland.—Includes former croplands, orchards, improved pastures, and farm sites not tended within the past 2 years, and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush.

Inhibiting vegetation.—Cover sufficiently dense to prevent the establishment of tree seedlings.

Logging residues.—The unused portions of trees cut or killed by logging.

Manageable stand.—Commercial forest land generally 60 percent or better stocked with growing-stock trees of any size or species composition as long as they are suited, in the aggregate, to a single primary treatment opportunity.

Miscellaneous Federal lands.—Federal lands other than National Forests, lands administered by the Bureau of Land Management, and Indian lands.

Miscellaneous private lands—corporate.—Lands owned by private corporations other than forest industry.

Miscellaneous private lands—individual.—Privately owned lands other than forest industry, farmer-owned, or corporate lands.

Mortality.—Number of sound-wood volume of live trees dying from natural causes during a specified period.

National Forest land.—Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.—The increase in volume for a specific year.

Net volume.—Gross volume of wood less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and (b) productive-reserved forest land.

Nonforest land.—Land that has never supported forests and land formerly forested where timber production is precluded by development for other uses.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.—Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.—Publicly owned lands other than National Forests.

Other removals.—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber stand improvement, land clearing, and other changes in land use that result in the removal of the trees from the commercial forest.

Plant byproducts.—Wood products such as pulp chips, obtained incidental to production of other manufactured products.

Plant residues.—Wood materials from manufacturing plants not utilized for some product.

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Quality class.—A classification of sawtimber volumes by log or tree grades.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.—(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material, and (b) all live trees of noncommercial species.

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.—That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.—Live trees of commercial species containing at least a 12-foot saw log, or two contiguous saw logs, each 8 feet or longer, and with at least one third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.—Net volume of the saw-log portion of live sawtimber in board-foot International $\frac{1}{4}$-inch rule.

Seedlings.—Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.—Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.—Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.—Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.—Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.—Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.—Yellow pine species which include loblolly, longleaf, slash, pond, shortleaf, pitch, Virginia, and Table-Mountain pine.

Other softwoods.—Cypress, eastern redcedar, white cedar, eastern white pine, eastern hemlock, spruce and fir.

Stocking.—The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared to a minimum standard, depending on tree size, to fully utilize the growth potential of the land.

Fully stocked.—100 percent or more stocking

Medium stocked.—60 to 100 percent stocking

Poorly stocked.—Less than 60 percent stocking

Survivor growth.—The increase in volume of growing-stock trees that survive cutting and mortality for a specified year.

Timber products.—Roundwood products and plant byproducts.

Timber removals.—The net volume of growing-stock trees removed from the inventory by harvesting; cultural operations, such as stand improvement; land clearing, or changes in land use.

Unproductive forest land.—Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions, because of adverse site conditions.

Upper-stem portion.—That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas.—Areas within the legal boundaries of cities and towns, suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land use class.

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Forest surveys of the Coastal Plain of Virginia reveal a declining forest land base, a declining softwood inventory, and unfavorable relationships between growth and removal of softwoods. The 1966 survey of the region revealed an 8 percent drop in the volume of softwood growing stock, prompting Virginia's forestry leaders to take actions designed to reverse the decline. Forest industries modified their wood procurement to reduce removals from the Coastal Plain, and the Virginia General Assembly enacted legislation to assist private, nonindustrial landowners in improving management of their forest land. Data on stand-age distribution further describe the region's forest resource, its past history, present conditions, and future outlook. Timber management opportunities are described, and the estimated acreage available for each opportunity is presented.

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GOVT. DOCUMENTS

VIRGINIA'S TIMBER, 1977

outheastern Forest Experiment Station
Asheville, North Carolina

May 1978

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FOREWORD

This report presents the principal findings of the fourth evaluation of Virginia's forest resources. The field inventory was started in February 1975 and completed in March 1977. Three previous Statewide inventories, completed in 1940, 1957, and 1966, provide reference points for measuring changes and trends over the past 37 years. This analysis focuses mainly on changes and trends since 1966.

Five Survey Unit reports issued as the inventory progressed through the State provide additional breakdowns of the data and contain some county tables. Copies of these reports can be obtained from the Southeastern Forest Experiment Station. A Forest Information Retrieval service is also available at the Southeastern Station; forest statistics are compiled at cost for any geographic area within the Station territory.

Section 9 of the McSweeney-McNary Forest Research Act of 1928, as amended, and the Forest and Rangeland Renewable Resources Planning Act of 1974 authorize these forest resource evaluations. The Southeastern Forest Experiment Station, headquartered at Asheville, North Carolina, administers these forest evaluations in Florida, Georgia, North Carolina, South Carolina, and Virginia. The primary objective of these periodic evaluations is to develop and maintain the resource information needed for formulating sound forest policies and programs.

The combined efforts of many people have gone into this inventory and evaluation of Virginia's forest resources. Appreciation is expressed to all Work Unit and Station personnel who participated in the field and office work. The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Virginia Division of Forestry, The Chesapeake Corporation of Virginia, Continental Forest Industries, Weyerhaeuser Company, and Virginia Polytechnic Institute & State University. Special appreciation is also expressed for the excellent cooperation of other forest industries, private landowners, and public agencies in providing information and allowing access to the sample locations.

Finally, the evaluation of many benefits derived from Virginia's forest resources is beyond the scope of this report. The purpose of this report is to evaluate the timber situation.

DAVID B. THORUD, Assistant Station Director for Continuing Research, Carolinas-Virginia

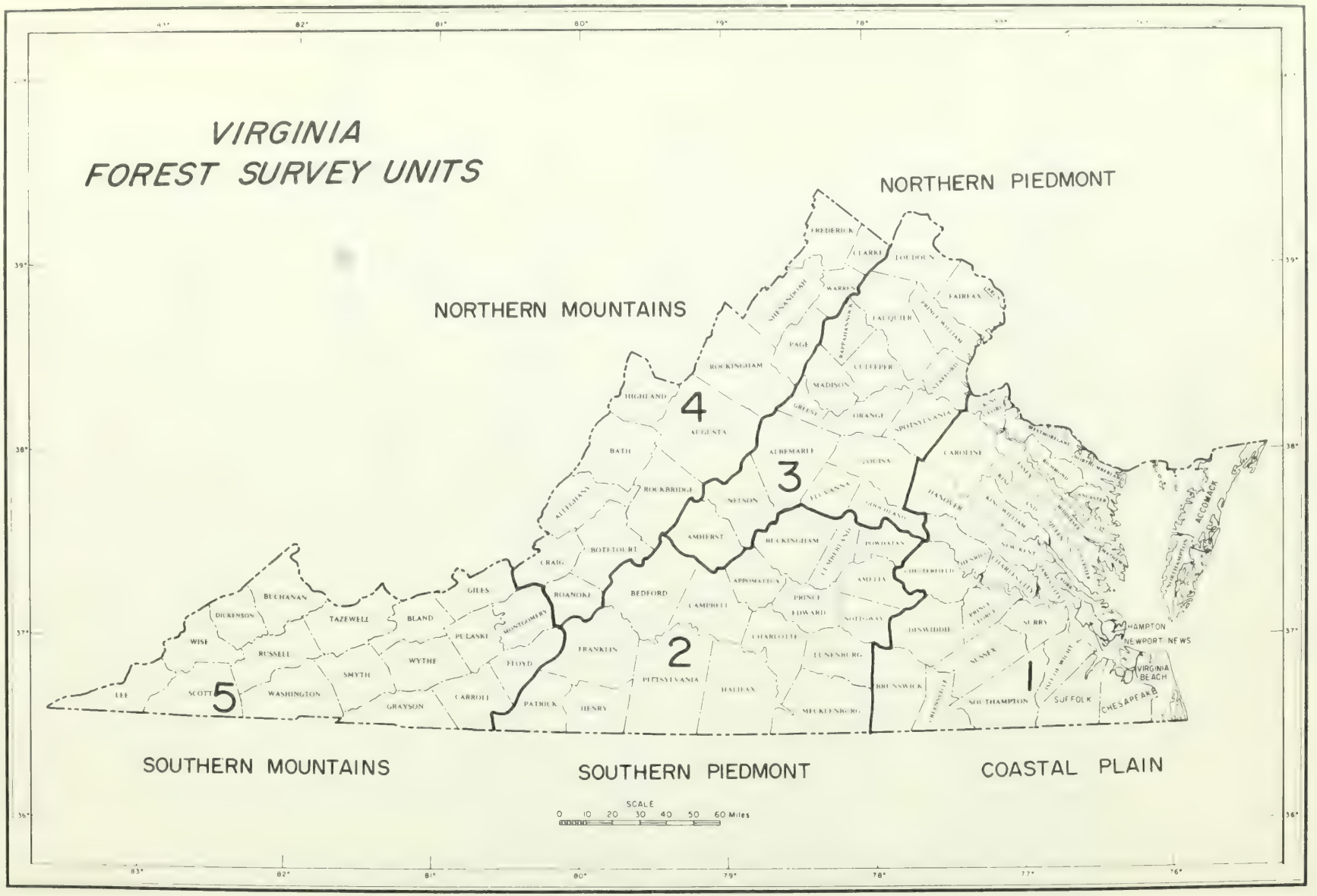

Figure 1. — Forest Survey Units in Virginia.

VIRGINIA'S TIMBER, 1977

by

HERBERT A. KNIGHT, Resource Analyst

and

JOE P. McCLURE, Principal Resource Analyst

HIGHLIGHTS

Since the third inventory of Virginia's forest resources was completed in 1966–

–area classified as commercial timberland increased from 15.8 to almost 16.0 million acres, or less than 1 percent. Reversion of former agricultural lands to forest, mostly in the Northern Piedmont, and reclassification of some marginal sites on the National Forests in the Mountain Region accounted for most of this small net increase. Acreage of commercial timberland declined slightly in both the Coastal Plain and Southern Piedmont. Prospects for any further increase in acreage available for timber production are dim. Acreage of idle cropland, the primary source of new forest land, is shrinking.

–the downward trend in forest ownership by farmers continued but at a slower rate. Between 1957 and 1966, acreage of farm woodland declined from 10.1 to less than 7.0 million acres. The 1977 inventory classified 6.2 million acres as farmer owned. Collectively, farmers and other private, nonindustrial landowners still control 12.3 million acres, or 77 percent of the commercial timberland. Forest industries increased their timberland base to almost 1.7 million acres, or by 7 percent. These statistics indicate, however, that forest industries have slowed their rate of land acquisition. Publicly owned timberland has increased gradually to almost 2.0 million acres.

–rate of successful pine regeneration averaged almost 71,000 acres annually compared to only 56,000 acres during the preceding decade. Still, a strong successional trend from pine to hardwood continued. Between 1957 and 1977, acreage of pine forest type declined 24 percent; the average annual loss was 53,000 acres. Hardwoods replaced pines on at least 35 percent of the acreage harvested and retained in commercial forest between 1966 and 1977.

–volume of growing-stock timber on commercial forest land increased from 16.2 to 19.7 billion cubic feet, or by 22 percent. Although hardwoods accounted for more than 80 percent of the net gain, softwood volume increased 14 percent, reversing the downward trend measured in the 1966 inventory. Pine volume in the Coastal Plain continued to decrease but at a slower rate. The overall volume increase is attributed to a sharp rise in growth and some reduction in removals. Volume of loblolly pine, the primary species featured in timber management, increased less than 10 percent; however, many of the young loblolly plantations are still in the sapling-seedling stage of development. Yellow-poplar increased more than 60 percent in volume and now rivals white oak as the State's most abundant hardwood.

–rate of net annual growth increased 38 percent to an average of 52 cubic feet per acre of commercial forest. Hardwood growth, up 44 percent, accounted for more than three-fourths of the increase. Softwood growth increased 28 percent. By region, average growth per acre ranged from a low of 40 cubic feet per year in the Mountains to a high of 60 cubic feet in the Coastal Plain. In the Piedmont, annual growth averaged 56 cubic feet per acre. Statewide, mortality siphoned off 20 percent of the gross softwood growth. Up to 43 percent of this softwood growth loss was attributed to recent outbreaks of pine bark beetles.

–timber was removed from some 360,000 acres annually through harvesting, intermediate cutting, and forest diversions. This average estimate bridges a decline in annual timber removals over most of the remeasure-

ment period followed by an upturn in recent years. In 1976, removals of growing stock totaled 496 million cubic feet and included 1,680 million board feet of sawtimber. About 77 percent of the cubic volume removed was converted into timber products; 9 percent was left in the woods as logging residues; and the remaining 14 percent was removed in cultural operations, land clearing, and withdrawals where the timber was not used. Closer timber use, both in the woods and at the processing plants, has boosted product output per cubic foot of wood harvested.

–pulpwood has surpassed saw logs in total product output. An increase in production of hardwood roundwood and plant byproducts of all species has more than offset a sharp decline in pine roundwood. In 1976, byproducts accounted for 25 percent of the total pulpwood output compared to 17 percent in 1965. While both number of sawmills and annual lumber production declined between 1965 and 1976, saw logs remained the leading roundwood product. After several decades of continuous decline, there seemingly has been an abrupt turnabout in the use of fuelwood.

–at least 610,000 acres were artificially regenerated. About 68 percent of this tree planting occurred on forest acres recently harvested. Another 11 percent was on old fields or other nonforest land. The remaining 21 percent of the planting effort occurred on the backlog of poorly stocked forest land. Hardwood encroachment poses a problem in some of these young pine plantations, particularly those established on cutover forest land.

–there was no significant treatment or disturbance on 11.1 million acres, or 70 percent of the land classified as commercial forest in 1977. About 23 percent of the undisturbed stands were on sites unfavorable for intensive silvicultural practices either because of steep slopes or year-round water problems. Only 13 percent of the treated or disturbed stands occurred on similar sites.

–the overall outlook for future timber supplies has improved. For example, a projection based on the 1966 conditions estimated a prospective available cut of some 755 million cubic feet annually by 1995. A similar projection based on the 1977 conditions suggests a prospective available cut of 840 million cubic feet by 1996, with a further increase to 929 million cubic feet by 2006. Although the pine outlook has improved, hardwoods account for more than 90 percent of the prospective increase.

TIMBER TRENDS

Virginia encompasses 25.5 million acres of land and spans three major physiographic regions: Coastal Plain, Piedmont, and Mountain. The Coastal Plain extends inland about 125 miles to an elevation of 300 feet along its western boundary and contains 25 percent of the land. Major tidal rivers and the Chesapeake Bay divide the northern and central portions of this region into four long peninsulas, one being the Eastern Shore. Although 42 percent of Virginia's population resides in the Coastal Plain, the region is still 64 percent forested.

The Piedmont, with 39 percent of the land, is a gently rolling to hilly plateau extending across the central part of the State between the Coastal Plain and Blue Ridge. Elevations range from 300 feet on the east up to 1,000 feet at the base of the mountains. In width, the region tapers from 150 miles along the North Carolina line, down to 50 miles at the Potomac River. About 37 percent of Virginia's population resides in the Piedmont and is largely concentrated in the north. The Southern Piedmont has the highest proportion of forested land in the State, 67 percent; the Northern Piedmont has the lowest, 61 percent.

The Mountain Region, with 36 percent of the land, has three distinct land formations: the Blue Ridge Mountains on the east, the Appalachian Plateau on the west, and the valley and ridges in between. Within this rugged topography, elevations rise up to 5,700 feet. With only 21 percent of the State's inhabitants, much of the region is sparsely populated. The Northern Mountain Unit is 65 percent forested compared to 63 percent in the Southern Unit, where almost one-fourth of the land is classified as pasture.

This fourth inventory of Virginia's forest resources identified significant differences in recent trends in land use, ownership patterns, forest type, and timber production among the three regions. Also, because of important sectional differences, this analysis retains the traditional divisions of both the Piedmont and Mountain Regions into southern and northern Survey Units (fig. 1).

LITTLE CHANGE IN COMMERCIAL FOREST ACREAGE

Statewide, between 1966 and 1977, area classified as commercial timberland increased from 15.8 to almost 16.0 million acres, or less than 1 percent. Reversion of former agricultural lands to forest, mostly in the Northern Piedmont, and reclassification of some marginal sites on the National Forests in the Mountain Region accounted for most of this small net increase. Acreage of commercial forest land declined slightly in both the Coastal Plain and Southern Piedmont. The Coastal Plain loss reflects the withdrawal of some 50,000 acres in the Dismal Swamp from future timber production.

Prospects for any further increase in acreage available for timber production in Virginia are dim. As in the rest of the Southeast, this primary source of new forest land is gradually drying up. For example, between the 1957 and 1966 inventories, almost 650,000 acres of idle agricultural land in Virginia reverted to forest. Between 1966 and 1977, about 450,000 acres of such land reverted. The 1966 inventory classified 660,000 acres as idle cropland; the 1977 inventory 365,000 acres. Meanwhile, diversions of commercial timberland to other uses continue at the rate of 45,000 acres annually (table I).

In addition to the commercial forest land, almost 445,000 acres in Virginia were classified as noncommercial forest. Timber harvesting is prohibited on 84 percent of this land, and the remaining 16 percent is incapable of producing 20 cubic feet of industrial wood per acre per year because of adverse site conditions. Forests with-

Table I. – Changes in area of commercial forest land, by Survey Unit, Virginia, 1966–1977

Survey Unit	Area of commercial forest land in:		Net change	Changes							
				Total gain	Additions from:		Total loss	Diversions to:			
					Non-forest	Noncommercial forest		Noncommercial forest	Agriculture	Urban and other	Water
	1966	1977									
	Thousand acres										
Coastal Plain	4,079.3	4,003.5	- 75.8	91.2	87.2	4.0	167.0	55.7	31.8	77.5	2.0
Southern Piedmont	3,789.9	3,778.4	- 11.5	86.0	86.0	–	97.5	–	57.8	37.9	1.8
Northern Piedmont	2,458.9	2,552.1	+ 93.2	171.9	160.8	11.1	78.7	11.3	25.9	31.1	10.4
Northern Mountain	2,503.3	2,625.7	+122.4	190.3	42.9	147.4	67.9	24.4	33.9	9.6	–
Southern Mountain	2,993.0	3,013.1	+ 20.1	96.4	79.6	16.8	76.3	5.1	30.3	38.7	2.2
State	15,824.4	15,972.8	+148.4	635.8	456.5	179.3	487.4	96.5	179.7	194.8	16.4

drawn from timber production within the Shenandoah National Park, the Great Dismal Swamp National Wildlife Refuge, and along the Blue Ridge Parkway account for well over half of the noncommercial forest land. Timber harvesting and other uses are also restricted to varying degrees on the Mount Rogers National Recreation Area and other parts of the Jefferson and George Washington National Forests.

DECLINE IN FARM WOODLAND SLOWS

As in other Southeastern States, transfer of forest ownership in Virginia from farmers to other private owners has been common. Twenty years ago, farmers owned 10.1 million acres, or 65 percent of Virginia's commercial timberland. By 1966, acreage of farm woodland had dropped below 7.0 million acres to 44 percent of the total. Since 1966, the decline has continued but at a slower rate. This latest inventory classified 6.2 million acres, or less than 39 percent of the commercial forest land, as farmer owned. Ownership of much of this acreage has shifted to other miscellaneous private owners who vary greatly in their attitudes toward forest management. Collectively, farmers and other private, nonindustrial landowners still control 12.3 million acres, or 77 percent of the commercial timberland.

Since 1966, forest industries have increased their timberland base to almost 1.7 million acres, or by about 7 percent. Compared with earlier trends, these statistics indicate forest industries have slowed down their acquisition of more land. Between the 1957 and 1966 inventories, they increased their land base from 1.2 to almost 1.6 million acres. Although forest industries own less than 11 percent of the commercial forest land, they control about 25 percent of the acreage of pine forest types.

Almost 2.0 million acres or 12 percent of Virginia's commercial forest land is publicly owned. About three-fourths of this timberland is on the Jefferson and George Washington National Forests, located mainly in the Mountain Region. Other large Federal holdings include the Quantico, A. P. Hill, and Camp Pickett military reservations and forests around the John H. Kerr Reservoir. Collectively, the State, counties, and municipalities control almost 13 percent of the publicly owned timberland. Although changes in forest classification distort the trend, acreage of publicly owned timberland has gradually increased.

HARDWOODS CONTINUE TO REPLACE PINES

Over the years, Virginia has experienced a strong successional trend from pine to hardwood within its commercial timberland. Because of changes in survey procedure, changes in acreage by forest type between 1957 and 1977 provide the best measure of the trend. In 1966, sample plots were allowed to straddle two or more forest conditions. This procedure inflated the estimate of oak-pine type and consequently affected other types. In both the 1957 and 1977 inventories, sample plots were confined to a single condition.

During this 20-year period, acreage of pine type declined 24 percent; the average annual loss was 53,000 acres. During this period, acreage of hardwood type increased almost 15 percent; the average annual increase

was 79,000 acres. A net annual increase of 26,000 acres in commercial forest land accounts for the difference. Since 60 percent of the nonforest acres reverting to forest between 1966 and 1977 came in with pine, the 53,000 acres of net annual loss in pine type is probably a conservative estimate of the rate of hardwood encroachment.

It is still too early to quantify how effective recent pine reforestation efforts have been in curbing the trend toward hardwood. A prime opportunity for regenerating more acreage with pine occurs at time of harvest. Yet, between 1966 and 1977, hardwoods replaced pines on at least 35 percent of the acreage harvested and retained in commercial forest. This process alone accounts for an annual loss of some 24,500 acres of pine forest type.

If all forest types are included, about 2.0 million acres were harvested and retained in commercial forest between 1966 and 1977, excluding thinnings and other intermediate cuttings. When field crews remeasured the sample plots on these cutover lands, pines dominated the stocking on only 24 percent of the acreage. Pines made up at least one-fourth of the stocking on another 14 percent classified as oak-pine forest type. These figures are slightly higher than the pine proportions on all timberlands–a possible sign of progress. For example, pines dominate the stocking on 3.4 million acres, or less than 22 percent of all timberland. Pines make up at least one-fourth of the stocking on another 1.9 million acres, or 12 percent, classified as oak-pine.

The age distribution of the pine stands provides some further evidence of progress in pine regeneration. It indicates, on the average, almost 71,000 acres were successfully regenerated with pine annually during the past decade, compared to only 56,000 acres during the preceding decade. These figures include reversions of idle agricultural lands to pine.

INVENTORY VOLUME UP 22 PERCENT

Between 1966 and 1977, volume of growing-stock timber on commercial forest land increased from 16.2 to 19.7 billion cubic feet, or by 22 percent. Although hardwoods accounted for more than 80 percent of the net gain, softwood volume increased by 14 percent, reversing the downward trend measured in the 1966 inventory. Volume of pine timber in the Coastal Plain continued to decrease, but the rate of loss slowed. The overall volume increase is attributed to a sharp rise in growth and some reduction in removals (fig. 2).

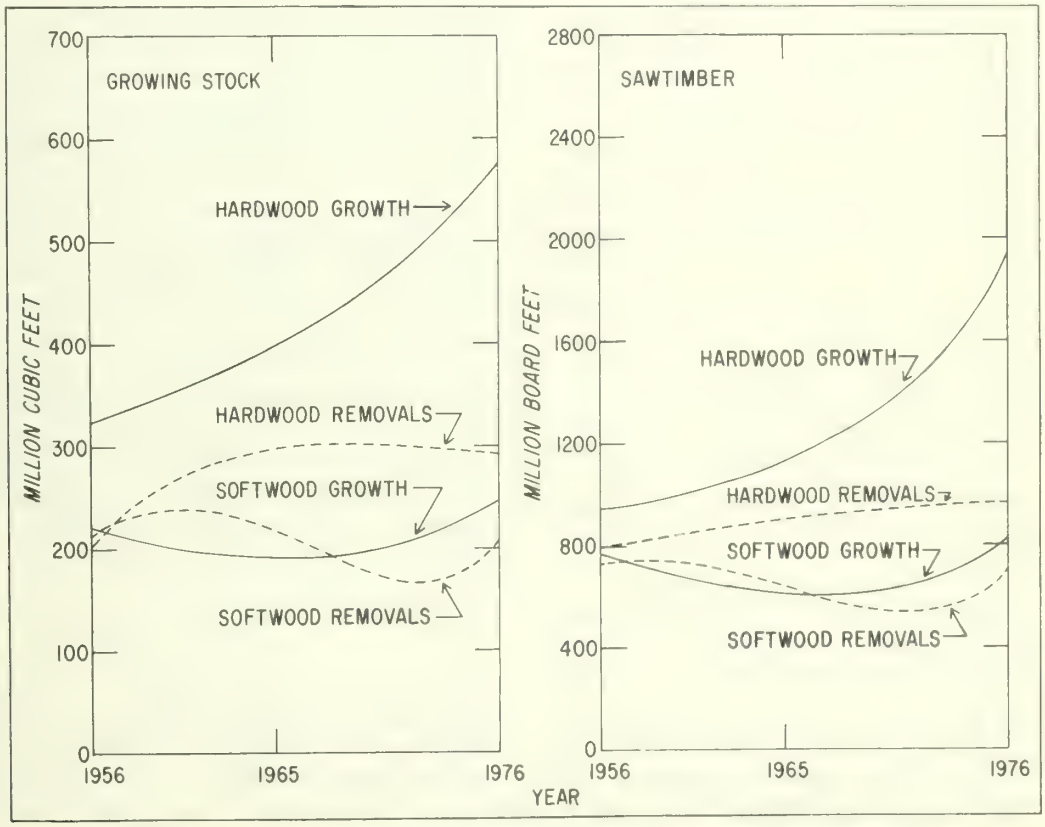

Figure 2. – Trends in net growth and timber removals in Virginia since 1956.

By region, the increase in volume ranged from 4 percent in the Coastal Plain to 33 percent in the Mountains. Volume was up 28 percent in the Piedmont. By ownership, the increase ranged from 5 percent on forest industry lands to 54 percent on National Forests. This small increase for forest industry reflects a rapid conversion of its older natural stands to plantations. Almost 38 percent of its timberland supports young sapling-seedling stands. Sapling-seedling stands occupy less than 12 percent of the acreage on National Forests. Volume was up 20 percent on other private holdings and 40 percent on other public forests.

The volume increases also extended across all tree sizes for both softwoods and hardwoods. The decline in softwood volume between 1957 and 1966 occurred mainly in diameter classes 6 through 12 inches. These diameter classes have now recovered in most of the State. Softwood volume continues to peak in the 8-inch-diameter class, and drops off sharply beyond the 10-inch class (fig. 3). This distribution suggests most pines are cut once they reach these size classes. A similar distribution shows hardwood volume begins to level off at 10 inches, and peaks in the 12-inch-diameter class. Many hardwoods are cut at this size, and volume drops off very sharply beyond 14 inches (fig. 4).

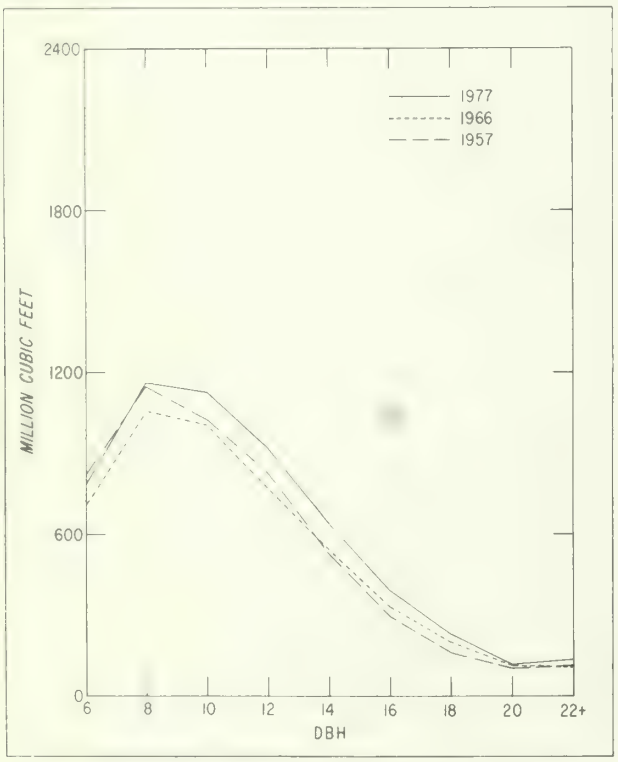

Figure 3. — Volume of softwood growing stock, by tree diameter, 1957, 1966, and 1977.

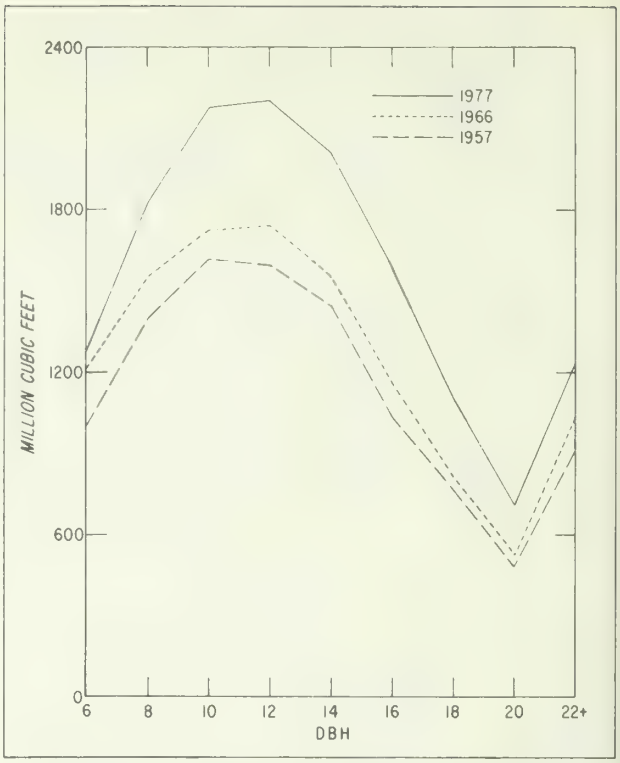

Figure 4. — Volume of hardwood growing stock, by tree diameter, 1957, 1966, and 1977.

The inventory of growing-stock volume includes 53.8 billion board feet of sawtimber, up 25 percent since 1966. By region and ownership, this buildup in sawtimber inventory followed much the same pattern as described for total growing stock. Almost 51 percent of the sawtimber volume is in trees 15.0 inches d.b.h. and larger, compared to 50 percent in 1966 and 48 percent in 1957. About one-fourth of Virginia's timberland supports stands with 5,000 board feet or more per acre.

The inventory also includes 3.5 billion cubic feet of timber in trees failing to qualify as growing stock because of species, poor form, or internal rot. Although these trees are generally unsuitable for saw logs, they contain 15 percent of the volume of all live trees 5.0 inches d.b.h. and larger. About 95 percent of this inferior timber is hardwood.

SPECIES COMPOSITION CHANGES

The species makeup of Virginia's timber resource varies considerably by region. In terms of volume, loblolly pine and Virginia pine are the leading softwood species (fig. 5). Together, they account for almost 70 percent of the softwood growing stock. Loblolly pine

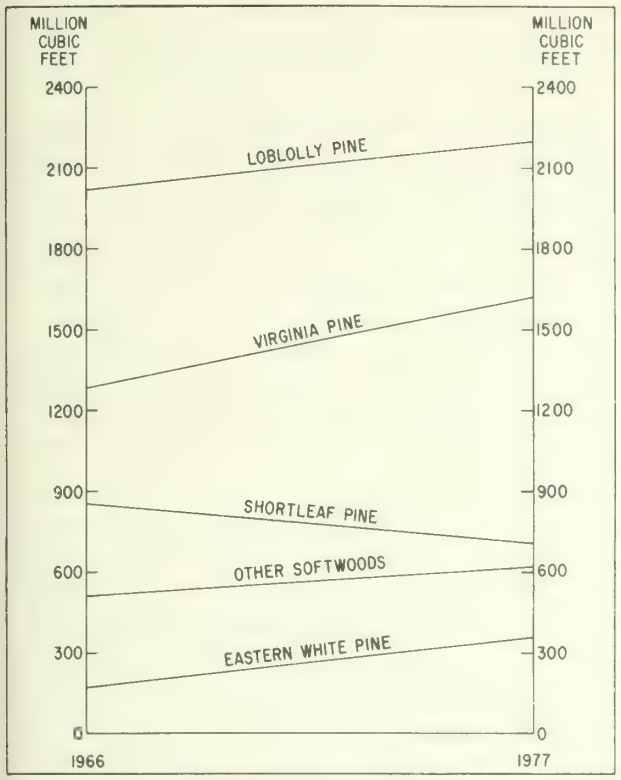

Figure 5. — Change in volume of softwood growing stock, by species, 1966-1977.

predominates in the Coastal Plain and is the primary species featured in timber management. Statewide, volume of loblolly pine has increased less than 10 percent since 1966; however, many loblolly plantations are still in the sapling-seedling stage of development.

Virginia pine is the leading softwood species in the Piedmont and its volume is increasing rapidly. As the pioneer species on much of the agricultural land that has reverted to forest, Virginia pine accounted for half of the net increase in softwood volume between 1966 and 1977. Shortleaf pine volume decreased 17 percent over the same period; its volume is declining throughout most of the Southeast.

In the Mountain Region, pitch pine is the leading softwood species in the Northern Unit, and eastern white pine predominates in the Southern Unit. Statewide, volume of eastern white pine more than doubled between 1966 and 1977.

Hardwoods continue to dominate the species composition in each of the three physiographic regions. In the Coastal Plain, white oak and sweetgum are the most prevalent hardwood species in terms of timber volume. In the Piedmont, yellow-poplar and white oak are the leading hardwoods. Among a variety of oaks and other hardwoods, chestnut oak and yellow-poplar are the most abundant species in the Mountain Region.

Statewide, all of the major hardwood species except blackgum and tupelo increased in volume since 1966 (fig. 6). Volume of blackgum and tupelo declined 15 percent. Of all the hardwood species, yellow-poplar is increasing fastest. Up more than 60 percent in volume since 1966, yellow-poplar now rivals white oak as the State's most abundant hardwood. Collectively, the wide variety of oaks still account for slightly more than half of the total hardwood growing stock.

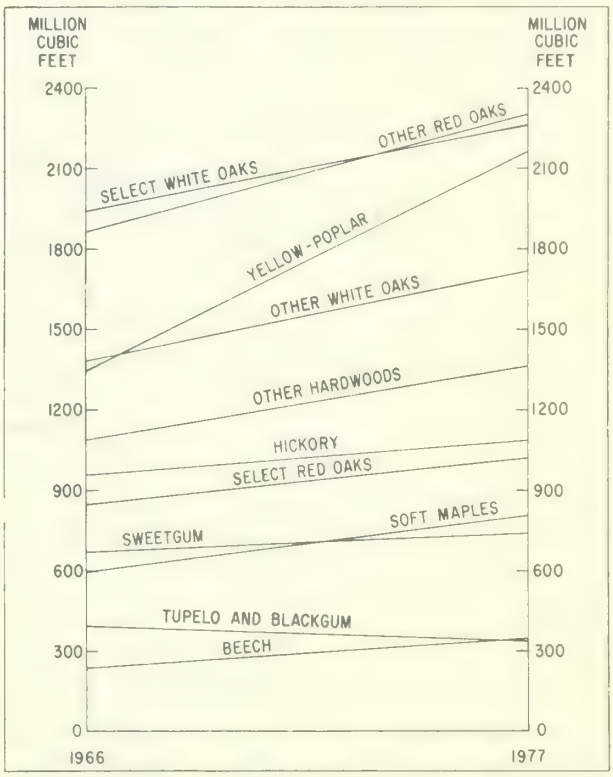

Figure 6. — Change in volume of hardwood growing stock, by species, 1966-1977.

GROWTH RATE UP 38 PERCENT

In 1976, net growth of growing-stock timber averaged 52 cubic feet per acre of commercial forest land, or 38 percent above the adjusted growth rate in 1965. Hardwood growth was up by 44 percent and accounted for more than three-fourths of the total increase. Softwood growth increased 28 percent. During the latter part of the 11 years between measurements,

pine bark beetles caused extensive mortality in Virginia's forests. Statewide, mortality siphoned off 20 percent of the softwood growth. Up to 43 percent of this softwood growth loss was attributed to the beetle outbreaks.

By region, average annual growth per acre ranged from a low of 40 cubic feet in the Mountains to a high of 60 cubic feet in the Coastal Plain. In the Piedmont, growth averaged 56 cubic feet per acre. Older hardwood stands, together with the relatively high proportion of poor sites, explain the low growth rate in the Mountain Region. The high growth rate in the Coastal Plain reflects considerable effort in more intensive timber management and the relatively high proportion of good sites. More than half of the State's pine plantations have been established in this region. The greatest gain in growth rate, more than 60 percent, occurred in the Piedmont. Here, the statistics reflect the development of many young pine stands established on retired agricultural lands. In the Piedmont, ingrowth of saplings into the poletimber-size class accounted for 23 percent of the gross softwood growth, compared to only about 14 percent in the other regions.

By ownership class, average growth per acre ranged from a low of 38 cubic feet on the National Forests, up to 63 cubic feet on other public forests. Again, the low growth rate on National Forests is attributed to the prevalence of older hardwood stands and poor sites. On forest industry lands growth averaged 57 cubic feet per acre, compared to 52 cubic feet on other private holdings. A high proportion of sapling-seedling stands tended to pull the industry average down. Within the other private owner classes, the growth rate was slightly higher on farm than on the nonfarm holdings.

A detailed breakdown of gross growth into its various components, by Survey Unit and species group, along with the distribution of mortality and removals, indicates the sources of annual change in timber volume (table II). Survival growth, the volume increment on

Table II. – Annual components of change in the volume of growing stock on commercial forest land, by Survey Unit and by softwood and hardwood, Virginia, 1976

Survey Unit and species group	Gross growth	Components of growth					Mortality	Net growth	Removals	Net change
		Survivor growth	Ingrowth	Growth on ingrowth	Growth on removals	Growth on mortality				
	Million cubic feet									
Coastal Plain:										
Softwood	128.9	107.7	16.5	1.8	2.1	0.8	25.4	103.5	111.6	- 8.1
Hardwood	146.8	128.5	15.2	1.2	1.7	0.2	10.0	136.8	95.6	+ 41.2
Total	275.7	236.2	31.7	3.0	3.8	1.0	35.4	240.3	207.2	+ 33.1
Southern Piedmont:										
Softwood	94.1	70.7	19.9	1.6	1.3	0.6	19.7	74.4	57.4	+ 17.0
Hardwood	152.8	134.0	15.4	1.6	1.6	0.2	12.2	140.6	75.1	+ 65.5
Total	246.9	204.7	35.3	3.2	2.9	0.8	31.9	215.0	132.5	+ 82.5
Northern Piedmont:										
Softwood	46.6	34.9	10.2	0.7	0.6	0.2	8.8	37.8	24.9	+ 12.9
Hardwood	115.0	101.2	11.7	0.8	1.1	0.2	11.6	103.4	57.4	+ 46.0
Total	161.6	136.1	21.9	1.5	1.7	0.4	20.4	141.2	82.3	+ 58.9
Northern Mountain:										
Softwood	19.1	15.9	2.8	0.2	0.1	0.1	5.3	13.8	6.8	+ 7.0
Hardwood	89.8	79.2	9.3	0.8	0.3	0.2	9.1	80.7	26.1	+ 54.6
Total	108.9	95.1	12.1	1.0	0.4	0.3	14.4	94.5	32.9	+ 61.6
Southern Mountain:										
Softwood	20.7	17.7	2.6	0.2	0.1	0.1	3.0	17.7	4.5	+ 13.2
Hardwood	129.0	112.2	15.0	1.0	0.5	0.3	14.5	114.5	36.6	+ 77.9
Total	149.7	129.9	17.6	1.2	0.6	0.4	17.5	132.2	41.1	+ 91.1
State:										
Softwood	309.4	246.9	52.0	4.5	4.2	1.8	62.2	247.2	205.2	+ 42.0
Hardwood	633.4	555.1	66.6	5.4	5.2	1.1	57.4	576.0	290.8	+285.2
Total	942.8	802.0	118.6	9.9	9.4	2.9	119.6	823.2	496.0	+327.2

growing-stock trees 5.0 inches d.b.h. and larger in the inventory at the beginning of the year and surviving to its end, accounted for 85 percent of gross growth. Ingrowth, the net volume of growing-stock trees reaching 5.0 inches d.b.h. during the year, and the subsequent growth on these trees, accounted for another 14 percent. Growth on removals before removal, and growth on mortality before death made up the remaining 1 percent.

In 1976, mortality of growing stock totaled almost 120 million cubic feet and reduced gross growth by 13 percent. Although hardwoods exceeded softwoods in stocking, inventory volume, annual growth, and volume removed, softwoods accounted for slightly more than half of the mortality. The mortality of pine caused by bark beetles explains this exception. The annual insect kill also included more than 80 million board feet of pine sawtimber.

For both softwoods and hardwoods, relatively little of the mortality was attributed to wildfire. With all of its land under protection, Virginia has one of the most successful fire control records in the South. Over the entire remeasurement period, acreage burned averaged less than 10,000 acres per year (table III).

Table III. – Area under fire protection, protected area burned, number of fires, and average size of fires, Virginia, 1966-1976[1]

Year	Area protected[2]		Protected area burned		Fires	Average size of fires
	M acres	*Percent*	*M acres*	*Percent*	*Number*	*Acres*
1966	15.711	100	9	0.06	2,149	4
1967	16,172	100	14	0.09	1,970	7
1968	16,187	100	11	0.07	2,779	4
1969	16,206	100	11	0.07	1,990	6
1970	16,204	100	12	0.07	1,893	6
1971	16,222	100	17	0.10	1,716	10
1972	16,173	100	2	0.01	792	3
1973	16,215	100	4	0.02	976	4
1974	20,457	100	9	0.04	2,942	3
1975	20,508	100	5	0.02	2,467	2
1976	20,517	100	15	0.08	5,677	3

[1] Source: U.S. Department of Agriculture, Forest Service, Wildfire Statistics, 1966–1976.

[2] Includes forest and nonforested watershed lands.

TIMBER PRODUCTS OUTPUT

Results from three separate studies were merged to estimate the output of timber products in Virginia for 1976: (1) The remeasurement of permanent sample locations provided the estimates of total timber removals. (2) Felled trees were measured at a sample of active harvesting operations to develop utilization factors for each of the roundwood products. (3) All primary wood-using plants were canvassed to obtain information on wood receipts, byproducts, and wood residues. Based on these studies, volume of roundwood harvested in Virginia totaled about 464 million cubic feet. The estimate of total timber products output includes an additional 64 million cubic feet of plant byproducts, such as chipped residues used for pulpwood and veneer cores used to manufacture lumber. Altogether, timber products output totaled about 528 million cubic feet.

The canvass of primary wood-using industries showed that 486 mills operated in Virginia during 1976 (fig. 7). These mills received logs, bolts, and other forms of roundwood from which they manufactured lumber, veneer, plywood, chips, pulp, paper, and other products. In addition, an undetermined number of secondary manufacturing plants located within the State were engaged in the remanufacture of these products into finished goods such as furniture, fixtures, and containers. Altogether, the forest products industry in Virginia employs more than 60,000 people and generates an annual payroll of more than $500 million.

SAW LOGS ACCOUNT FOR MORE THAN 40 PERCENT OF TOTAL ROUNDWOOD OUTPUT

Although both number of sawmills and annual lumber production declined between 1965 and 1976, saw logs remained the leading roundwood product harvested and accounted for more than 40 percent of the 1976 roundwood output. Number of active sawmills decreased from 870 to 452. Based on Bureau of the Census figures, annual lumber production fluctuated between a high of 1,179 million board feet in 1966 and a low of 867 million board feet in 1975 (fig. 8). This same source showed production back up to 944 million board feet in 1976.

Based on the International ¼-inch log rule, volume of saw logs harvested in Virginia during 1976 exceeded 1,013 million board feet. The solid-wood content of these logs exceeded 189 million cubic feet. Hardwood species provided 58 percent of the saw-log output and softwood species provided 42 percent. These figures still identify considerable imbalance between product output and the species makeup of the timber inventory. Hardwoods make up 70 percent of Virginia's sawtimber inventory and account for 70 percent of the annual sawtimber growth, but they provide less than 60 percent of the saw-log harvest.

PULPWOOD HAS SURPASSED SAW LOGS IN TOTAL PRODUCT OUTPUT

Although saw logs remain the leading roundwood timber product harvested in Virginia in terms of volume, pulpwood has surpassed saw logs in total output when pulped plant residues are included. In 1976, the round pulpwood harvest totaled 149 million cubic feet; however, other wood-using plants within the State produced another 50 million cubic feet of pulpwood in the form of chips and other byproducts. Based on these figures, byproducts accounted for one-fourth of the total pulpwood output, compared to 17 percent in 1965. This improved utilization, together with an increase in use of hardwood for pulp fiber, helped ease the demand on Virginia's pine timber supplies.

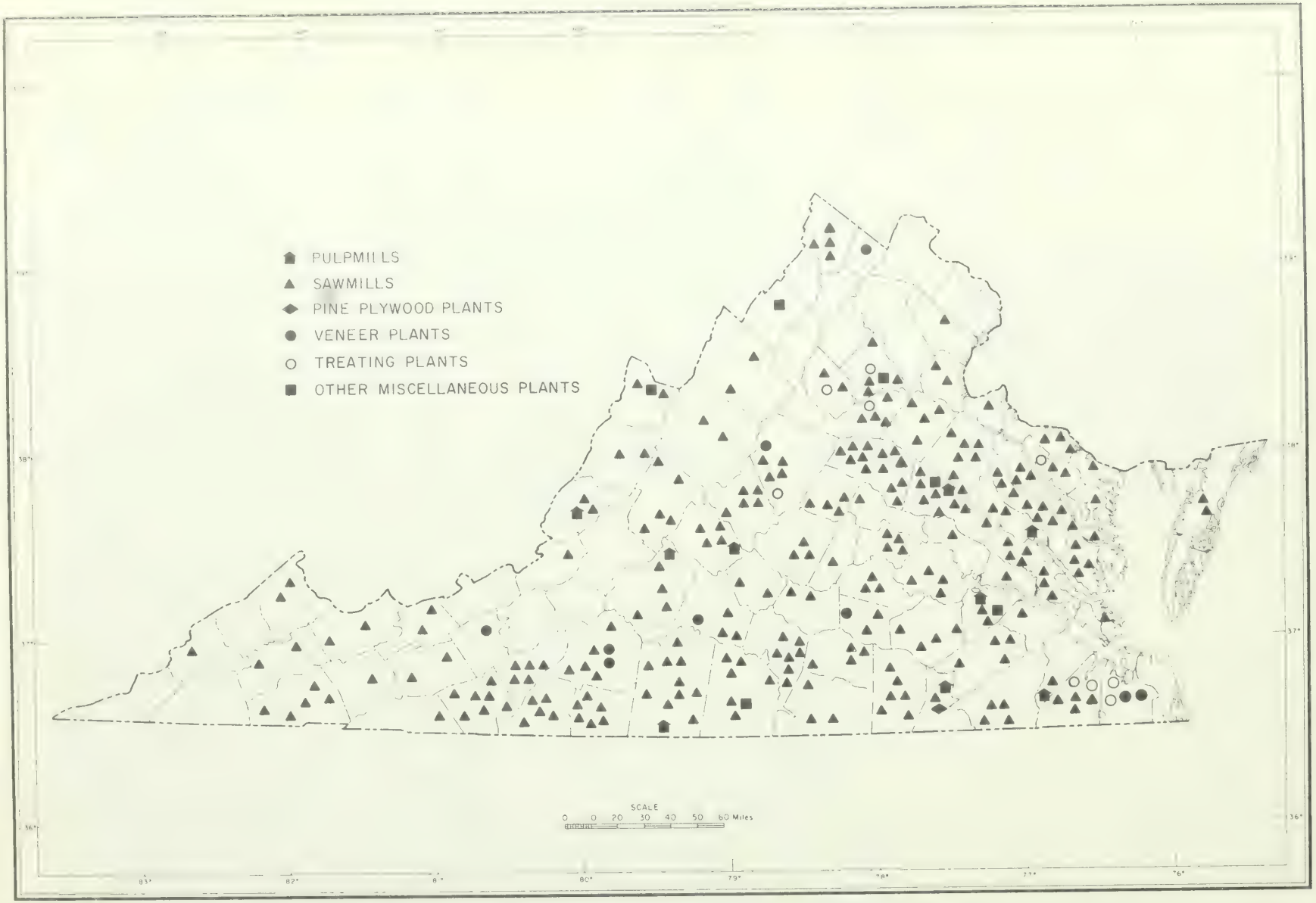

Figure 7. — Location of primary wood-using industries in Virginia, 1976.
(Sawmills producing less than a million board feet are excluded.)

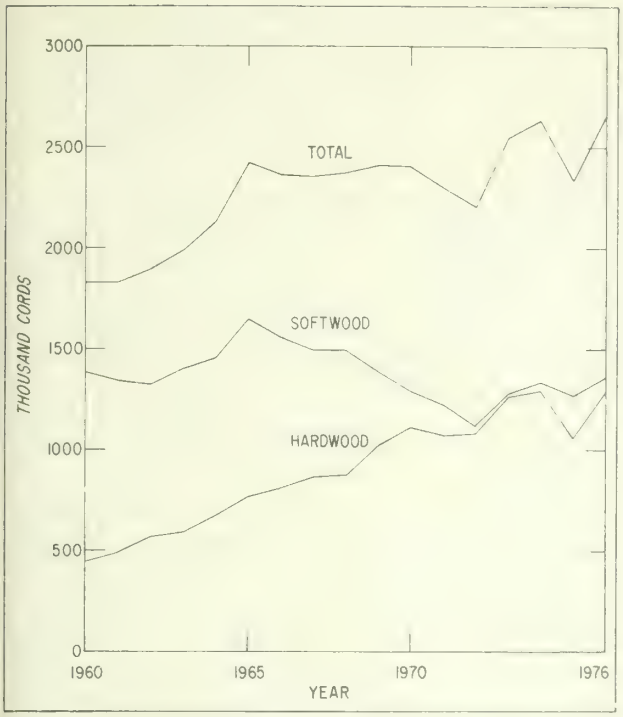

Figure 8. — Lumber production in Virginia, 1960-1976.

Between 1965 and 1972, annual output of softwood pulpwood decreased from the equivalent of 1,650,900 cords down to 1,121,100 cords, or by 32 percent. Since 1972, softwood production has again been on the increase, reaching the equivalent of 1,366,100 cords in 1976. Over this same 11-year period, annual output of hardwood pulpwood increased from 770,100 cords to a record high of 1,295,700 cords in 1976, or by 68 percent (fig. 9). All of these figures include both roundwood and byproducts.

Although the total 1976 pulpwood production figures in this report agree with the Virginia figures published in Resource Bulletin SO-66, "Southern Pulpwood Production, 1976," differences are acknowledged in the breakdown between roundwood and byproducts. With the upward surge in number and kinds of chipping operations, it has become increasingly difficult to maintain a clear separation between volume of roundwood and volume of byproducts. Results from the more complete industry canvass provided higher and more accurate measures of roundwood chipped.

Even with the increased use of hardwood for pulpwood, the strong demand for pine continues to be strong relative to the species composition in Virginia's forest. For example, 75 percent of the volume of all live timber is hardwood; yet, hardwoods provided only about 50 percent of the round pulpwood harvest in 1976. The pulp industry's need for long fiber limits its increased use of the more abundant hardwood timber supplies. Attention is also called to the estimated 180 million board feet of sawtimber removed as part of the 1976 pulpwood harvest. Nearly 60 percent of this sawtimber used for pulpwood was softwood.

Based on the interstate movement in 1976, Virginia is a net importer of round pulpwood. Nine pulpmills, with a combined daily pulping capacity of 7,158 tons,

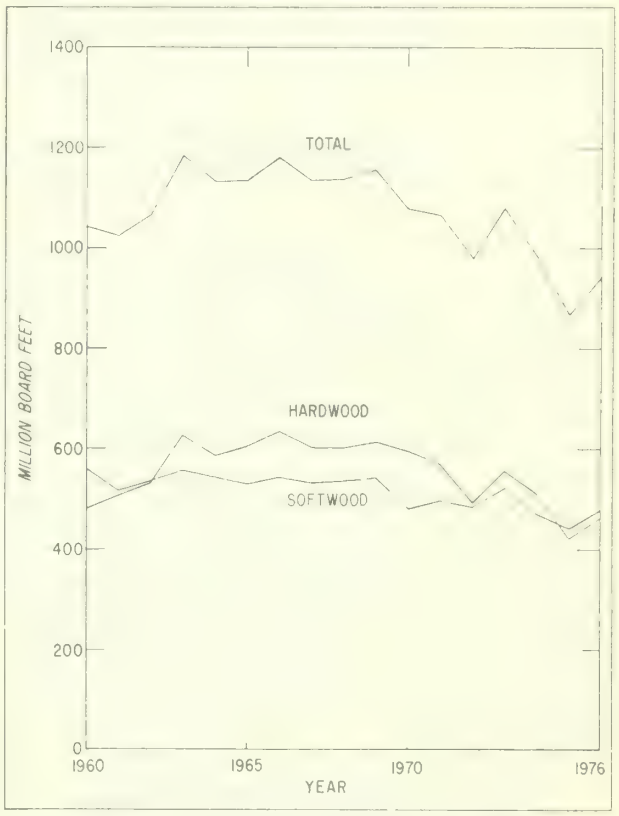

Figure 9. — Pulpwood production in Virginia, including byproducts, 1960-1976.

operated in the State during 1976. Based on the reported sources of roundwood received at these mills, 73 percent came from Virginia, while the remaining 27 percent was brought in from North Carolina and other States. Only 11 percent of the round pulpwood cut in Virginia was transported to mills outside the State. Virginia's pulp industry imported almost 3 cords of roundwood for each cord exported. With expansion projects already underway to increase pulping capacities at some of the existing mills plus announced plans for the construction of one new mill, producers will likely look to Virginia's timberland for a greater quantity of pulpwood.

OUTPUT OF PEELER LOGS UP

The timber products output studies measured a further decline in the harvest of hardwood veneer logs; however, the total output of peeler logs was up. An increase in the output of pine peeler logs accounted for the total gain. In 1965, Virginia's first pine plywood plant was just coming on stream. While there is still only one major pine plywood plant in the State, volume of softwood peeler logs harvested in 1976 exceeded 8 million cubic feet—more than three times greater than the output of hardwood peeler logs. Altogether, output of veneer logs totaled 11 million cubic feet and accounted for only 2 percent of total roundwood output. The industry canvass identified nine hardwood veneer plants in Virginia. In 1976, the State was a net importer of both softwood and hardwood veneer logs.

OUTPUT OF OTHER INDUSTRIAL PRODUCTS DOWN

In 1976, the combined roundwood output for poles, piling, posts, cooperage bolts, particleboard furnish, and other miscellaneous industrial products totaled about 7 million cubic feet. Additional plant byproducts used primarily for particleboard pushed total output up to almost 12 million cubic feet. In 1965, the comparable combination of these timber products totaled about 19 million cubic feet.

The imbalance between the species composition of Virginia's timber inventory and the species source of its major timber products also shows up in these minor products. In 1965, the source of these minor products was divided about equally between softwoods and hardwoods. In 1976, softwoods provided almost 60 percent of their total output.

FUELWOOD OUTPUT REVERSES ITS HISTORIC DECLINE

After several decades of continuous decline based on the best information available, the 1976 output data indicate an abrupt turnabout in the use of fuelwood. With shortages and rampant increases in the prices of conventional fuels, homeowners and industries alike are again turning to wood to supplement or replace other sources of fuel. While the role of wood in helping to alleviate the energy problem is still uncertain, wood as a renewable resource offers considerable potential in States like Virginia.

Because of the large number of users of relatively small amounts of fuelwood, both the total quantity and source of fuelwood are difficult to measure. The determination of total timber removals from the remeasurement of permanent sample plots, the utilization study, and information obtained from the canvass of primary wood-using plants ensure a reasonable accuracy for the fuelwood estimates.

Surpassed by only saw logs and pulpwood in terms of volume, fuelwood strengthened its position as the State's third leading timber product in 1976. Fuelwood output totaled almost 113 million cubic feet, plus an additional 7 million cubic feet of plant byproducts used for industrial fuel. When combined, this total output was nearly double the 1965 estimate.

A breakdown of the 1976 output by source contradicts any conception that growing-stock trees are not used for fuelwood. Plant byproducts accounted for only 10 percent of the nearly 120 million cubic feet of total output. Rough, rotten, and dead trees together with saplings, tops, limbs, and trees cut from nonforest land accounted for another 34 percent. More than half of the total output came from trees 5.0 inches and larger meeting minimum standards for growing stock. In all of these figures, bark volume is excluded. About two-thirds of the growing stock used for fuelwood was hardwood.

TIMBER USE IMPROVES

Reductions in logging residues and plant residues, plus an increase in the use of material other than growing stock, indicate substantial improvement in timber use. These actions extend existing timber supplies. For example, the harvest of almost 464 million cubic feet of roundwood products in 1976 resulted in the removal of only 428 million cubic feet of growing stock based on the merchantability standards applied in the inventory. In 1976, less than 47 million cubic feet of logging residues were left in the woods, compared to more than 75 million cubic feet in 1965. Almost 18 percent of the roundwood output came from rough, rotten, and dead trees and other material outside the merchantability standards for growing-stock volume. In 1965, only 10 percent of the roundwood output came from these sources. The salvage of dead timber killed by pine bark beetles, plus the greater use of fuelwood, accounts for part of the increased output from these sources.

Based on information collected in the industry canvass, primary wood manufacturing plants in Virginia generated 19 million cubic feet of unused wood residues in 1976, compared to an estimated 50 million cubic feet in 1965. These figures suggest almost 80 percent of all wood residues generated at Virginia's primary wood manufacturing plants in 1976 were subsequently used, compared to less than 50 percent in 1965. In the Coastal

Plain, where more than half of the plant wood residues were generated in 1976, the use rate was nearly 90 percent. More than 45 percent of unused residues were generated at plants located in the Piedmont where the use rate was a little better than 70 percent. About two-thirds of the residue volume generated in the Mountain Region was used. For the State as a whole, fine material such as sawdust, shavings, and veneer clippings accounted for almost three-fourths of the unused wood residues. All of these residue estimates exclude bark. Nearly 80 percent of the bark residue generated at primary wood manufacturing plants was also used, mainly as industrial fuel.

In addition to the 428 million cubic feet of growing stock cut during the harvesting of roundwood products, another 68 million cubic feet were removed from the inventory by cultural operations, land clearing, and other changes in land use. This unused material is called other removals. About 55 percent of this volume was actually removed or destroyed during cultural operations and land clearing. The remaining 45 percent was in trees still standing on lands removed from commercial forest. Shade trees left standing around new homesites and developments are typical examples of the latter kinds of removals. To avoid distortions of trends in timber removals, timber on major withdrawals, such as the Dismal Swamp, is excluded from the estimates of other removals. In contrast to the reductions in logging residues and plant residues, volume of other removals more than doubled since 1965.

Altogether, volumes of logging residues, plant residues, and other removals totaled 134 million cubic feet in 1976, compared to more than 157 million cubic feet in 1965. In both years, more than 70 percent of this unused material was hardwood.

TIMBER SUPPLY OUTLOOK

Except for possible gains from improved utilization and protection, timber supplies available over the next decade or longer have been determined by actions already taken or foregone. Over a longer period, timber supplies can be increased to the limits established by the growth potential of lands available for timber production. The primary objective in this chapter of the analysis is to bracket future estimates of timber supplies between a *prospective* available cut—the amount available if past trends are extrapolated for 30 years—and a *potential* available cut—the amount attainable through improved timber management. Since softwoods and hardwoods were projected separately, four different projections were made using the Timber Resource Analysis System (TRAS) computer program. The results should not be misinterpreted as bold forecasts; they are reasonable estimates of timber supplies if the stated assumptions hold true.

ACREAGE OF TIMBERLAND WILL LIKELY DECREASE

With a continued buildup in stocking, both volume and growth of timber per acre will increase over the next 30 years. Past trends, however, point to a probable decrease in acreage of timberland. As stated earlier, the acreage of idle agricultural land, the primary source of new forest land, is declining rapidly. The reversion of this idle agricultural land to forest cannot be expected to offset the diversions of commercial forest land to other uses beyond the next decade. Based on the extrapolation of these trends, no significant reduction in acreage of timberland was assumed for the first decade. Between 1986 and 2006, however, the projections reflect an assumed reduction of 600,000 acres.

Aside from the likely decrease in total acreage, it will become increasingly difficult to sustain pine on 20 to 25 percent of the timberland. As forest industries complete their conversions of suitable sites to pine plantations and the reversion of idle agricultural lands to pine diminishes, the decline in pine acreage could accelerate rapidly. To prevent this possible decline, each acre of pine harvested should be regenerated with pine.

TIMBER REMOVALS WILL GRADUALLY INCREASE TO EQUAL GROWTH

Net annual growth provides a maximum estimate of the amount of cut that can be sustained without depleting the inventory. In the projections of timber supplies, growth and mortality rates as determined in this latest inventory were retained throughout the 30-year period. If removals are gradually increased to equal growth, results indicate net annual growth will increase from 52 to 60 cubic feet per acre. When the acreage assumptions are superimposed onto these results, *prospective* annual cut increases from 496 to 929 million cubic feet, including 3,264 million board feet of sawtimber.

HARDWOODS DOMINATE PROSPECTIVE SUPPLY

With the stated assumptions, hardwoods account for more than 90 percent of the prospective increase in available cut (fig. 10). By the end of the projection period, hardwoods would provide 75 percent of the annual removals, compared to 49 percent in 1956, 58 percent in 1965, and 59 percent in 1976. Additional hardwood markets would be required to accommodate this prospective increase in hardwood timber supplies. In light of the growing concern over energy sources, a renewed use of wood for fuel could provide an outlet for substantial quantities of poor-quality hardwoods.

Some users of this information may need to discount the prospective supply of hardwood. For example, nearly one-fourth of the existing acreage occupied with

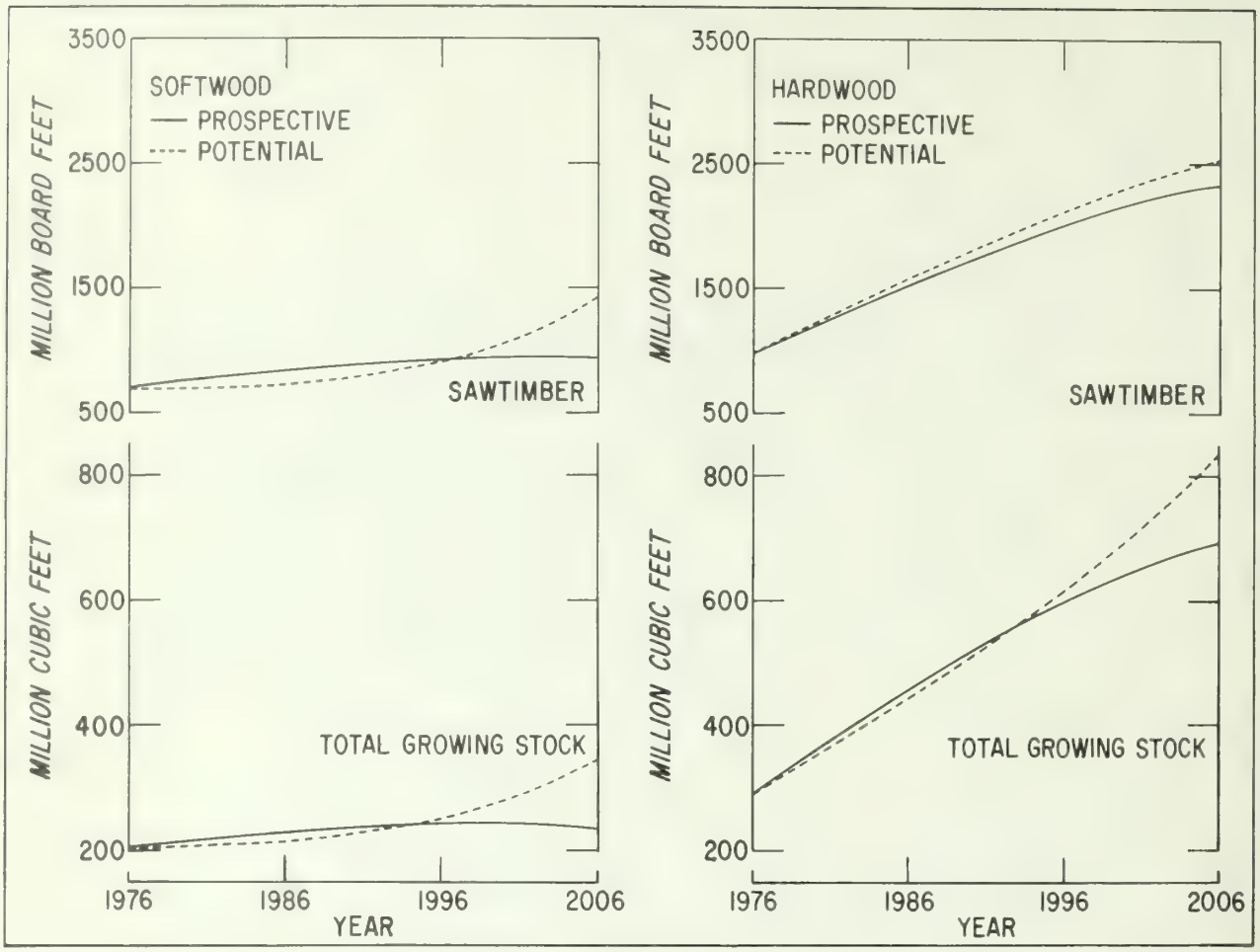

Figure 10. — Prospective and potential available cut, Virginia, 1976-2006.

hardwood types occurs either on slopes 40 percent or steeper or in areas with year-round water problems. It seems reasonable to assume this proportion will hold over the projection period. To harvest timber off these sites often requires special logging techniques.

PINE PLANTATIONS WILL PROVIDE MOST OF THE AVAILABLE SOFTWOOD

In contrast to the abundant hardwood supply, the prospective supply of softwoods will accommodate only a modest increase in cut over the next 30 years. Pine plantations will provide an increasing share of the softwood cut. Most of the pine plantations in Virginia were established after the 1965 inventory identified a pine growth deficit. Pine plantations now account for about 60 percent of all softwood stands less than 10 years old. Timber will start to come from these plantations in the 1990's.

Two separate and independent estimates of plantation acreage are presented in this analysis. First, based on annual reports of forest planting and seeding compiled by the U.S. Department of Agriculture Forest Service, an average of 77,500 acres was planted annually during the remeasurement period (table IV). Second, based upon the field crews' determination of stand origin at each sample location visited in this latest inventory, an average of 55,500 acres had been planted annually (table V). Since some planting efforts fail because of poor survival, mortality, and inadequate site preparation, the first estimate must be discounted. On the other hand, the second estimate is probably conservative since some planted stands are difficult to recognize on the ground. By using the average of the two estimates, one might conclude that some 66,500 acres of plantations will start feeding into the prospective softwood supply annually during the last decade of the projection period.

With an assumed average yield of 3,000 cubic feet per acre at 30 years of age, the annual harvest of 66,500

Table IV. – Acres of forest planting,[1] by ownership class, Virginia, 1966–1976

Fiscal year	Ownership class				All ownerships	Accumulative total
	National Forest	Other public	Forest industry	Other private		
	Acres					
						[2]525,669
1966	2,418	1,707	35,039	25,603	64,767	590,436
1967	2,748	1,412	43,963	26,797	74,920	665,356
1968	2,038	904	36,636	24,590	64,168	729,524
1969	2,006	1,286	41,381	25,706	70,379	799,903
1970	1,364	1,387	38,493	27,461	68,705	868,608
1971	1,804	2,472	35,072	32,539	71,887	940,495
1972	2,157	2,833	39,750	53,087	97,827	1,038,322
1973	1,511	3,966	30,419	47,559	83,455	1,121,777
1974	1,530	2,303	27,338	51,618	82,789	1,204,566
1975	1,407	2,449	24,849	59,218	87,923	1,292,489
1976	1,696	2,294	26,426	55,497	85,913	1,378,402

[1] Includes acres of planting by direct seeding. Source: U.S. Department of Agriculture, Forest Service, *Forest Planting, Seeding, and Silvical Treatments in the United States.*

[2] Accumulative total prior to FY 1966.

acres of pine plantations could account for up to 85 percent of the prospective available softwood cut. If hardwoods are included, natural stands would still be providing almost 80 percent of available cut.

Distribution of the acres planted by region suggests 52 percent of the prospective increase in timber supplies from plantations will occur in the Coastal Plain. Another 43 percent of the planting occurred in the Piedmont, and the remaining 5 percent was in the Mountain Region (table V). Statewide, about 55 percent of the pine plantations were located on lands owned or leased by forest industries. Another 44 percent occurred on other private lands, and the remaining 1 percent was on public holdings (table VI). Since most of the artificial reforestation in Virginia has been pine, the acreage difference between table V and table VI calls for an explanation. Because of poor survival and inadequate site preparation, hardwoods had encroached on some 195,000 acres with evidence of planting, to the extent that either an oak-pine or other hardwood forest type was assigned.

The inventory data indicate the problem of hardwood encroachment is more serious in plantations established on cutover forest land than in plantations established on old fields. For example, hardwood stocking exceeded pine in 25 percent of the plantations established on cutover forest land during the 11-year remeasurement period. Hardwood stocking exceeded pine in less than 10 percent of the plantations established on old fields. On the average, these determinations were made some 5 to 6 years following planting. These figures suggest that site preparation practices on cutover forest land are often insufficient for establishing pine plantations.

GROWTH PER ACRE CAN BE INCREASED BY ALMOST 50 PERCENT

In the projections made to determine prospective timber supplies, growth per acre increased from 52 to 60 cubic feet. A second set of projections estimated the potential timber supplies attainable over the same 30-year period through improved timber management. Here, growth per acre increased from 52 to 77 cubic feet. This rate more nearly reflects the inherent growth potential of Virginia's timberland with fully stocked natural stands.

In the projection of *potential* supplies, management goals were expressed in terms of basal area per acre and a stand-structure quotient for both softwoods and hardwoods. The stand-structure quotient is determined by dividing the number of trees in any 2-inch-diameter class by the number in the next larger class. In even-aged management, this quotient reflects the age distribution of the stands.

The goals selected for projection control would allow average stand densities of growing-stock trees 5.0 inches d.b.h. and larger to increase from 56 to 80 square feet per acre. Although this goal calls for only a 17 percent gain over the prospective increase when all species

Table V. – Area of commercial forest land, by stand origin and Survey Unit, Virginia, 1977

Stand origin	State		Survey Unit									
			Coastal Plain		Southern Piedmont		Northern Piedmont		Northern Mountain		Southern Mountain	
	Macres	*Percent*	*Macres*	*Percent*	*Macres*	*Percent*	*Macres*	*Percent*	*Macres*	*Percent*	*Macres*	*Percent*
Natural stands with no evidence of artificial regeneration	15,097.8	94.5	3,549.7	88.7	3,522.1	93.2	2,431.1	95.2	2,602.9	99.1	2,992.0	99.3
Stands originating wholly or in part from artificial regeneration since 1966	610.7	3.8	303.7	7.6	186.4	4.9	91.2	3.6	13.4	0.5	16.0	0.5
Stands originating wholly or in part from artificial regeneration prior to 1966	264.3	1.7	150.1	3.7	69.9	1.9	29.8	1.2	9.4	0.4	5.1	0.2
All stands	15,972.8	100.0	4,003.5	100.0	3,778.4	100.0	2,552.1	100.0	2,625.7	100.0	3,013.1	100.0

Table VI. – Area of commercial forest land, by broad management, ownership, and past treatment or disturbance classes, Virginia, 1977

Broad management and ownership classes[1]	Total area	Primary treatment or disturbance between 1966 and 1977							
		Harvesting with artificial regeneration	Harvesting with natural regeneration	Other harvesting	Inter-mediate cutting	Artificial planting	Natural disturbance	Other[2]	None
	Thousand acres								
Nonstocked forest:									
Public	40.3	–	–	6.9	3.6	–	2.2	–	27.6
Forest industry	37.2	–	–	30.2	–	–	–	–	7.0
Other private	174.9	–	5.6	32.0	8.8	–	–	21.8	106.7
Total	252.4	–	5.6	69.1	12.4	–	2.2	21.8	141.3
Pine plantations:									
Public	4.4	4.2	–	–	–	0.2	–	–	–
Forest industry	371.8	171.5	–	–	3.0	76.6	–	5.8	114.9
Other private	303.5	122.6	–	–	8.9	76.9	7.5	4.3	83.3
Total	679.7	298.3	–	–	11.9	153.7	7.5	10.1	198.2
Natural pine stands:									
Public	217.5	–	5.7	–	24.4	–	6.2	6.9	174.3
Forest industry	418.6	–	23.3	3.5	37.0	–	52.3	3.4	299.1
Other private	2,086.0	–	91.8	22.9	239.5	–	125.0	97.1	1,509.7
Total	2,722.1	–	120.8	26.4	300.9	–	183.5	107.4	1,983.1
Oak-pine stands:									
Public	174.8	–	5.3	8.5	7.2	–	3.6	3.6	146.6
Forest industry	238.5	44.4	10.3	17.2	7.6	10.1	2.8	6.1	140.0
Other private	1,507.6	29.2	95.5	63.9	176.8	15.2	51.2	71.0	1,004.8
Total	1,920.9	73.6	111.1	89.6	191.6	25.3	57.6	80.7	1,291.4
Upland hardwood stands:									
Public	1,501.6	–	84.3	21.2	82.8	4.2	40.2	25.3	1,243.6
Forest industry	548.8	15.6	26.3	61.7	26.3	2.3	14.7	22.4	379.5
Other private	7,674.0	19.5	377.9	489.6	862.5	3.1	163.5	376.6	5,381.3
Total	9,724.4	35.1	488.5	572.5	971.6	9.6	218.4	424.3	7,004.4
Bottomland hardwood stands:									
Public	17.3	–	–	0.8	–	–	3.2	–	13.3
Forest industry	68.7	–	3.0	5.8	–	–	2.4	–	57.5
Other private	587.3	–	9.6	56.4	37.7	–	52.4	9.5	421.7
Total	673.3	–	12.6	63.0	37.7	–	58.0	9.5	492.5
All classes:									
Public	1,955.9	4.2	95.3	37.4	118.0	4.4	55.4	35.8	1,605.4
Forest industry	1,683.6	231.5	62.9	118.4	73.9	89.0	72.2	37.7	998.0
Other private	12,333.3	171.3	580.4	664.8	1,334.2	95.2	399.6	580.3	8,507.5
Total	15,972.8	407.0	738.6	820.6	1,526.1	188.6	527.2	653.8	11,110.9

[1] Forest industry includes lands under long-term lease.

[2] Includes grazing, draining, prescribed burning, site preparation, and other miscellaneous treatments.

are grouped, it would require a gain of almost 30 percent for softwoods to be attained through improved pine regeneration practices. The management goals assumed a stand-structure quotient of 1.7 for both softwoods and hardwoods. Finally, it was assumed that softwood mortality rates could be reduced by 75 percent within 15 years, and hardwood mortality rates could be gradually reduced by 50 percent over the next 30 years. The more optimistic assumption used for softwoods is based on the fact that the base mortality rates reflect an unusually high loss of pines to bark beetles.

If the same assumptions are applied with regard to the decline in acreage as were applied in the prospective projections, *potential* annual cut climbs to 1,179 million cubic feet by year 2006, and would include 3,946 million board feet of sawtimber. The most significant increase over prospective supplies occurs in the volume of softwood (fig. 10). To achieve and sustain an inventory capable of supporting these levels of cut would require some shift in timber use from softwood to hardwood early in the projection period, along with improved regeneration of pine following harvesting.

STAND-AGE DISTRIBUTION REFLECTS RECENT PINE PLANTINGS

The distribution of commercial forest acreage by stand-age class and major forest type provides another indicator of future timber supplies. A stand-age profile of Virginia's timberland clearly shows the acceleration in pine planting during the past decade (fig. 11). For example, pine stands less than 10 years old occupy 708,000 acres, or 21 percent of the total acreage supporting pine forest types. About 60 percent of these young stands are plantations. Young stands are expected to replace natural stands 40 or more years old, which now occupy almost 1 million acres. Because of their age, these natural stands have accumulated average volumes of growing stock in excess of 2,000 cubic feet per acre. If the plantations are harvested 20 to 30 years in the future at ages of 30 to 40 years, they will contain little if any more volume than that which has now accumulated in old natural stands. The age distribution of pine stands, therefore, tends to support the earlier conclusion that only a modest increase can be expected in softwood timber supplies over the next 30 years.

70 PERCENT OF THE HARDWOOD STANDS ARE 40 YEARS OF AGE OR OLDER

Unlike pine stands, hardwood stands are concentrated in the older age classes. Of some 10.3 million acres with a manageable stand of hardwoods, 70 percent supported stands 40 years of age or older. Many of these stands have already reached maturity and most of the others will reach maturity over the next 30 years. Collectively, these stands offer the greatest opportunity for increasing timber cut over the next several decades.

Over the longer run, acreage deficiencies in the younger age classes, together with some 2.4 million acres so poorly stocked that a manageable stand does not exist, pose problems. Recent rates of hardwood harvesting and regeneration would have to be increased to correct the stocking deficiencies and unbalanced age distribution of the stands on the 12.5 million acres of hardwood type. Existing hardwood markets in Virginia cannot absorb the increase in hardwood harvesting opportunities implied in this age-stand profile. If current trends continue, average hardwood rotations will be extended and a large reserve of overmature stands will accumulate, resulting in substantial growth loss.

Of the 2.3 million acres of hardwood type without a manageable stand, about 53 percent had experienced no significant treatment or disturbance during the 11-year remeasurement period. The poorly stocked conditions on this acreage are not likely to improve without some intervention. Timber cutting or other types of disturbance during the same period contributed to the poor stocking conditions on the remaining 47 percent; therefore, the condition of some of these acres will improve. In both cases, many of the acres formerly supported pine stands.

Average volume per acre shown for each condition or age class in figure 11 excludes the volume in rough and rotten trees and all trees less than 5.0 inches d.b.h. Mortality, thinnings, and other types of intermediate cutting had also removed undetermined amounts of volume from some of the stands. The average volumes demonstrate the minimum performance of reasonably well-stocked stands across the range of sites.

185,000 ACRES HARVESTED ANNUALLY EXCLUDING DIVERSIONS AND INTERMEDIATE CUTTINGS

Measures of recent rates of forestry activities are needed before examining the management opportunities available for closing the gap between prospective and potential timber supplies in Virginia. In this latest inventory, crews determined the most significant treatment or disturbance evidenced at each sample location during the 11-year remeasurement period. A summary of this treatment and disturbance information by broad management and ownership classes provides a measure of recent forestry activities (table VI). Note that the

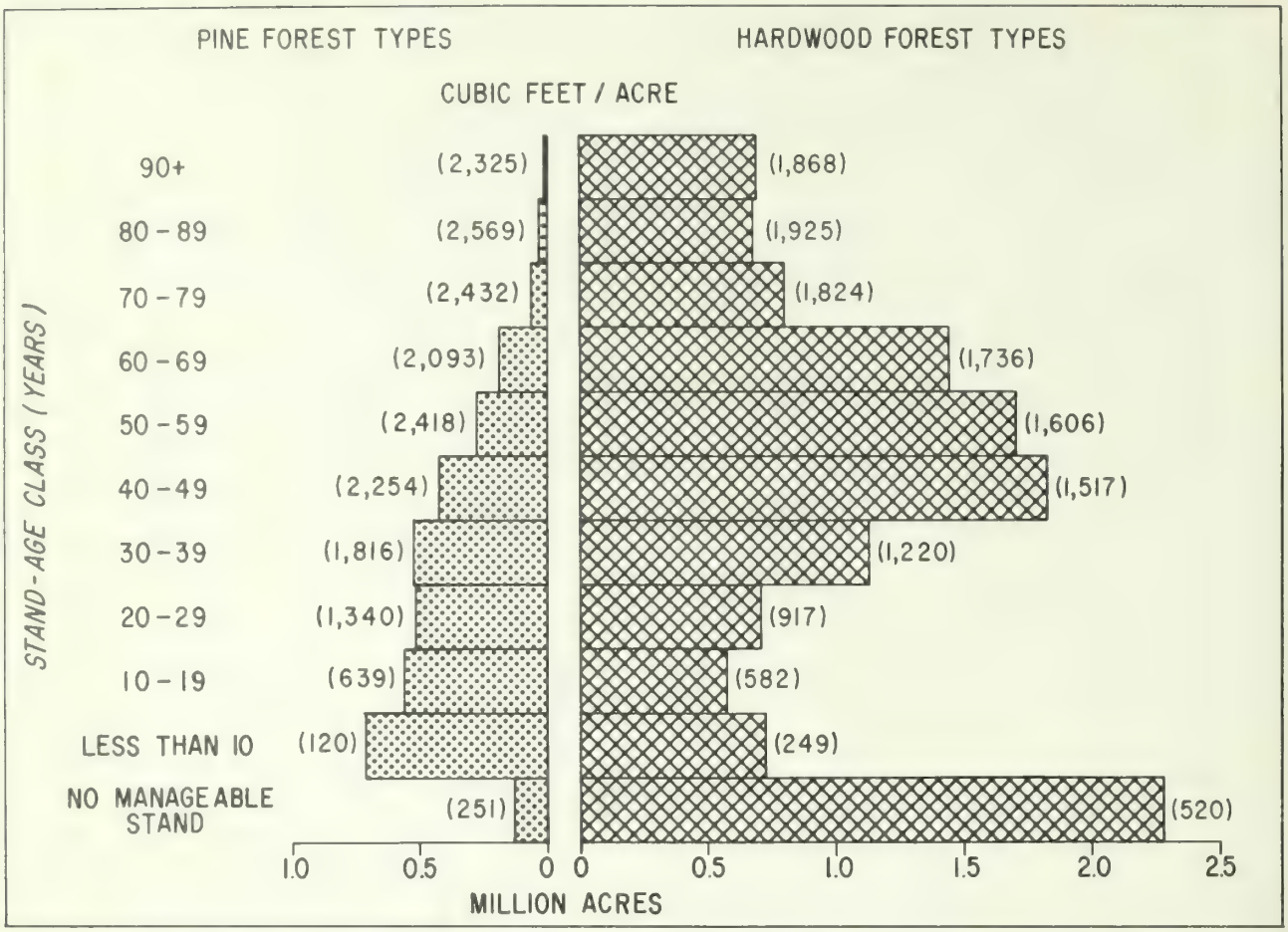

Figure 11. — Profile of area of commercial forest land, by stand-age class, by pine and hardwood forest types, with average volume of growing stock per acre (in parentheses), Virginia, 1977.

management classes describe the stands at the end of the remeasurement period rather than at the beginning.

Timber harvesting was the most common forestry activity observed. Of the nearly 16.0 million acres classified as commercial forest, almost 2.0 million acres had been harvested since the 1966 inventory. On the average, 185,000 acres were harvested annually and retained as commercial forest. Evidence of thinning or other types of intermediate cutting was observed on an additional 1.5 million acres. These figures exclude almost 0.5 million acres withdrawn or diverted to other land uses during the period. Timber on some of this acreage was also harvested. When the estimates of harvesting, intermediate cutting, and diversions are grouped, timber was removed from 360 acres annually.

Observations of recent treatment and disturbance indicated about 610,000 acres had been artificially reforested. A breakdown of this reforestation effort shows 68 percent occurred on forest acres also harvested during the remeasurement period. Another 11 percent was on old fields or other nonforest land. The remaining 21 percent of the planting effort was on the backlog of acreage needing regeneration.

Other significant treatments or disturbances by man were observed on 654,000 acres. These practices included forest grazing, draining, prescribed burning, site preparation, and other miscellaneous disturbances. Finally, conditions observed on an additional 527,000 acres had been significantly affected by natural disturbances. These natural disturbances included insect infestations, wildfire, disease, and weather. Estimates fail to reflect the full extent of these treatments and disturbances because one type of treatment or disturbance often masks another that may have occurred in the same stand.

70 PERCENT OF THE STANDS WERE UNDISTURBED

No evidence of significant treatment or disturbance within the remeasurement period was found on 11.1 million acres, or 70 percent of the land classified as com-

mercial forest. By region, the proportion of undisturbed stands ranged from a high of 79 percent in the Mountains to a low of 64 percent in the Piedmont. In the Coastal Plain, 65 percent of the stands had not been disturbed. By ownership class, the proportion of undisturbed stands ranged from a high of 82 percent on public lands to a low of 59 percent on lands owned or leased by forest industries. The proportion was 69 percent on other private lands. By broad management class, the proportion undisturbed ranged from 73 percent for both natural pine and bottomland hardwood stands to only 29 percent for pine plantations.

About 23 percent of the undisturbed stands were on sites unfavorable for intensive silvicultural practices either because of steep slopes or year-round water problems. Only 13 percent of the treated or disturbed stands occurred on similar sites.

MANAGEMENT OPPORTUNITIES

As projected, future timber requirements to meet the Nation's needs challenge the inherent growth capacity of all available timberland. Diminishing acreage, greater environmental concern, wider diversity among owner attitudes, and the increasing cost of intensive forest practices place additional strain on timber management. Ramifications of the energy crisis and forestry's role in its solution add still more uncertainty to the adequacy of prospective timber supplies. All of these factors stress the need for a sound statistical base of relative forest conditions. This fourth Statewide evaluation of Virginia's forest resources provides such a base (table VII).

ADVERSE SITES LIMIT OPPORTUNITIES ON 3.2 MILLION ACRES

Slopes 40 percent or steeper or year-round water problems limit the practice of intensive forestry on 3.2 million acres, or 20 percent of Virginia's timberland. While timber can be harvested off these relatively fragile sites, they seldom attract silvicultural investments. Over the past 11 years, less than 16 percent of this acreage experienced any cutting or treatment. On these adverse sites, volume of growing stock averaged 1,220 cubic feet per acre. Hardwood stands occupied more than 95 percent of the acreage.

By region, the proportion of total commercial forest land classified as adverse ranged from a high of 45 percent in the Mountains to a low of 5 percent in the Coastal Plain. Adverse sites limit timber management opportunities on about 7 percent of the acreage in the Piedmont. By ownership class, the proportion of adverse sites ranged from 33 percent on public lands to less than 7 percent on forest industry holdings. Almost 20 percent of other privately owned timberland is on sites unsuitable for intensive management.

OVER 7.6 MILLION ACRES SUPPORTED STANDS IN GOOD CONDITION

More than 7.6 million acres, or 48 percent of the commercial forest land, supported stands in relatively good condition on mangeable sites. Generally, these stands were 60 percent or better stocked with immature trees of acceptable quality, free from significant damage or competition. On these lands, volume of growing stock averaged 1,325 cubic feet per acre. Hardwood stands occupied 71 percent of the acreage, natural pine stands 22 percent, and pine plantations the remaining 7 percent. Protection and the prompt regeneration of acreage harvested should sustain a high rate of timber growth on these lands.

By region, the proportion of acreage suitable for timber management supporting stands in good condition ranged from 65 percent in the Mountains to less than 56 percent in the Coastal Plain. In the Piedmont, 60 percent of the acreage on manageable sites supported stands in good condition. By ownership class, 63 percent of the stands on public and forest industry acreage suitable for timber management were in good condition, compared to less than 59 percent on other private holdings.

OPPORTUNITIES IDENTIFIED ON 5.2 MILLION ACRES

Conditions on the remaining 5.2 million acres, or 32 percent of the timberland, were inadequate for optimum timber production. Without treatment, considerable growth loss will occur on these acres. This evaluation identified six management opportunities for improving existing conditions: (1) Salvage and regenerate seriously damaged stands on 98,700 acres. (2) Harvest and regenerate overmature stands on 945,600 acres. (3) Thin young, immature stands densely stocked with merchantable-size trees on 503,200 acres. (4) Remove undesirable

able VII. — Area of idle cropland and commercial forest land, by broad management, ownership, and treatment opportunity classes, Virginia, 1977

Broad management and ownership classes[1]	Total area	Broad treatment opportunity classes							
		Salvage	Harvest	Commercial thinning	Other stand improvement	Stand conversion[2]	Regeneration	Stands in relatively good condition	Adverse sites or conditions[3]
					Thousand acres				
le cropland:									
Public				–		–			
Forest industry						–	–		–
Other private	366.3			–			366.3		
Total	366.3		–	–			366.3		–
onstocked forest:									
Public	40.3			–			15.0		25.3
Forest industry	37.2		–				31.2		6.0
Other private	174.9			–		–	124.4		50.5
Total	252.4	–	–	–	–	–	170.6	–	81.8
ne plantations:									
Public	4.4					–		4.4	–
Forest industry	371.8		–	50.9	17.5	–	3.5	299.9	
Other private	303.5		–	44.1	10.1	–	8.3	241.0	–
Total	679.7		–	95.0	27.6		11.8	545.3	–
atural pine stands:									
Public	217.5		7.1	44.9	13.6	2.5		116.2	33.2
Forest industry	418.6	33.1	19.4	40.2	50.6	8.9	3.5	256.0	6.9
Other private	2,086.0	32.4	99.3	282.9	136.3	93.7	59.3	1,295.5	86.6
Total	2,722.1	65.5	125.8	368.0	200.5	105.1	62.8	1,667.7	126.7
ak-pine stands:									
Public	174.8		6.3	3.8	6.2	10.4		80.9	67.2
Forest industry	238.5	2.8	6.3	3.7	27.8	27.4	21.5	136.9	12.1
Other private	1,507.6	9.7	70.8	6.9	145.8	148.8	128.9	846.5	150.2
Total	1,920.9	12.5	83.4	14.4	179.8	186.6	150.4	1,064.3	229.5
oland hardwood stands:									
Public	1,501.6		142.4	–	91.1	30.8	100.3	624.6	512.4
Forest industry	548.8		40.7		29.2	47.5	79.8	277.6	74.0
Other private	7,674.0	20.7	486.1	25.8	443.1	564.1	911.5	3,215.1	2,007.6
Total	9,724.4	20.7	669.2	25.8	563.4	642.4	1,091.6	4,117.3	2,594.0
ottomland hardwood stands:									
Public	17.3		4.2		–	–	4.2	8.1	0.8
Forest industry	68.7		16.1	–	5.9	6.5	9.0	16.5	14.7
Other private	587.3		46.9		15.6	23.4	149.0	223.0	129.4
Total	673.3		67.2		21.5	29.9	162.2	247.6	144.9
l classes:									
Public	1,955.9		160.0	48.7	110.9	43.7	119.5	834.2	638.9
Forest industry	1,683.6	35.9	82.5	94.8	131.0	90.3	148.5	986.9	113.7
Other private	12,699.6	62.8	703.1	359.7	750.9	830.0	1,747.7	5,821.1	2,424.3
Total	16,339.1	98.7	945.6	503.2	992.8	964.0	2,015.7	7,642.2	3,176.9

[1] Forest industry includes lands under long-term lease.
[2] Areas occupied with species unsuitable for the site from the standpoint of timber production.
[3] Areas where management opportunities are severely limited because of steep slopes or poor drainage.

ees and competing vegetation from other immature ands on 992,800 acres. (5) Convert stands with species bviously incompatible with the site from the stand-oint of timber production to more suitable species on 4,000 acres. (6) Regenerate 1,649,400 acres too oorly stocked with acceptable trees to manage for tim-r production.

The makeup of this extensive and persistent backlog treatment opportunities varied by region and owner-ip class. Although less than one-third of the treatment pportunities identified occurred in the Coastal Plain, ore than 40 percent of the damaged and overmature ands were in this region. Some 39 percent of the im-ature stands offering thinning or other intermediate nd improvement opportunities also occurred in the oastal Plain. Only 26 percent of the conversion and eneration opportunities were located in this region. ore than half of these conditions were in the Pied-ont, where regeneration efforts were often inadequate llowing harvesting on many private, nonindustrial ldings. Statewide, almost 85 percent of the conversion d regeneration opportunities identified were in this ner class. Although less than 10 percent of all treat-nt opportunities occurred on public lands, this owner ss contained more than 15 percent of the high-risk rmature stands.

In addition to the treatment opportunities identi-d on 5.2 million acres of commercial forest land, ost 0.4 million acres were classified as idle cropland l included as part of the regeneration opportunity in le VII. In the past, these lands have been the primary rce of new forest acreage. Owners receptive to the a of planting trees on these idle lands should be ouraged to do so. Site preparation and planting costs considerably less on these acres than on cutover or rly stocked forest land. About one-half of these idle ads are in the Piedmont.

REGENERATE ACREAGE HARVESTED

Up to this point, the analysis has focused on oppor-tunities for improving existing conditions on an accumu-lation of 5.2 million acres of treatment need. Another way to increase prospective timber supplies is to prevent development of poor conditions on other lands. Poor stocking results largely from inadequate regeneration following harvesting of private, nonindustrial lands. If the landowner is to control the species composition and condition of his forests, it is vital he exercise this control at time of harvest.

Between 1966 and 1977, almost 2 million acres were harvested and retained in commercial forest excluding thinnings and other intermediate cuttings. This finding suggests about 185,000 acres must be regenerated annually just to replace harvested stands. Among all the timber management opportunities available, priority must be given to the prompt and adequate regeneration of each acre harvested and retained in commercial forest. Otherwise, the accumulation of poorly stocked conditions will persist, causing substantial loss in timber growth. The longer the delay in regenerating acres harvested, the greater the costs will be for site preparation and other corrective actions.

Currently, Virginia's Reforestation of Timberlands Act provides one source of assistance for the private, nonindustrial owner to regenerate his harvested stands. In addition, some forest products companies offer landowner technical assistance through various agreements made at time of harvest. The Forestry Incentives Program also provides assistance to the small private owner; however, this assistance has not been available for regenerating lands harvested within the past 5 years. Finally, the professional advice and services available through forestry consultants and the Virginia Division of Forestry are invaluable to the private landowner, particularly when he sells his timber. Forestry interests must effectively communicate the availability of these various sources of assistance to the private forest owners. It must not be taken for granted that all of these owners are aware of the various options available to them.

In conclusion, it is important for forestry interests to fully recognize the fact that private, nonindustrial owners possess 77 percent of Virginia's timberland. The management of these lands largely determines the adequacy of Virginia's timber supplies. The total public benefit from timber produced on these lands extends well beyond stumpage prices paid to individual owners. Jobs, payrolls, and value added to this renewable resource justify the cost of forestry assistance programs to supplement the voluntary investments in improved forestry practices.

APPENDIX

PROCEDURE

The procedure used in the fourth Statewide inventory and valuation of Virginia's forest resources included these basic eps:

1. Initial estimates of forest and nonforest acreages were eveloped from the classification of 81,505 sample clusters ystematically spaced on the latest aerial photographs available. ield crews checked a subsample of 6,560 of these 16-point usters on the ground. A linear regression was fitted to the data develop the relationship between the photo and ground assification of the subsample. This procedure provided a means r adjusting the initial acreage estimates for change in land use nce date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications ere determined from measurements recorded at 4,091 ground mple locations systematically distributed within the commerl forest land. A 10-point cluster of plots, measured with a sal area factor of 37.5 square feet per acre, was systematically aced on an acre at each of these locations. Trees less than 5.0 ches d.b.h. were talled on fixed-radius plots around the point nters.

3. Equations developed from detailed measurements of nding trees in Virginia and throughout the Southeast were ed to compute volumes of individual tally trees. A mirror cali r and sectional aluminum poles were used to obtain the addinal measurements on standing trees required to construct the ume equations. In addition, felled trees were measured at 85 ive cutting operations to provide utilization factors for the fferent timber products and species groups, and to supplement e standing-tree volume study.

4. Estimates of growth, removals, and mortality were deterned from the remeasurement of 4,238 permanent sample plots tablished in the 1966 inventory. A 1976 survey of timber ducts output, conducted by the Virginia Division of Forestry, ng with the annual pulpwood production study in the South vided additional information for breakdowns of removals by duct. The Virginia Polytechnic Institute and State University Lumber Manufacturers Association of Virginia assisted in survey of products output.

5. Ownership information was collected from public rds and through correspondence and direct contacts in the field. In those counties where the sample missed a particular ownership class, temporary samples were added and measured to describe forest conditions within the ownership class.

6. All field data were sent to Asheville for editing and were punched on cards and stored on magnetic tape for computer processing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

7. As each of the five Survey Units in Virginia was completed, special summaries of the information were added to a master data bank of forest resource statistics maintained in Asheville for the entire Southeast. A Forest Information Retrieval (FIR) program is available for compiling the information for any area of interest as a cooperative service.

RELIABILITY OF THE DATA

Statistical analysis of the data indicates a sampling error of ± 0.23 percent for the estimate of total commercial forest area, 1.12 percent for the total cubic-foot volume, 1.22 percent for total cubic-foot volume growth, and 3.77 for total cubic-foot removals. As the totals are broken down by forest type, species, tree diameter, and other subdivisions, the sampling error increases. If homogeneity of variances is assumed, the order of this increase is suggested in the following tabulation showing the sampling errors in terms of one standard error, or two chances out of three.

Sampling error[1]	Commercial forest area	Volume of growing stock		
		Inventory	Net growth	Removals
Percent	*M acres*	. . . . *Million cubic feet*		
1	845.0	–	–	–
2	211.2	6,164.3	306.3	–
3	93.9	2,739.7	136.1	–
4	52.8	1,541.1	76.6	440.6
5	33.8	986.3	49.0	282.0
10	8.4	246.6	12.3	70.5
15	3.8	109.6	5.4	31.3
20	2.1	61.6	3.1	17.6
25	1.4	39.5	2.0	11.3

[1] By random-sampling formula.

DEFINITIONS OF TERMS

Acceptable trees.—Growing-stock trees of commercial species that meet specified standards of size and quality, but not qualifying as desirable trees.

Available cut.—The volume of timber that would be available for cutting on commercial forest land during a given period under specified assumptions concerning growth, cut, mortality, and forest management practices.

Basal area.—The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed as square feet of basal area per acre.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization.

Commercial species.—Tree species suitable for industrial wood products.

Cropland.—Land under cultivation within the past 24 months, including orchards and land in soil-improving crops, but excluding land cultivated in developing improved pasture. Also includes idle farmland.

Desirable trees.—Growing-stock trees of commercial species having no serious defects in quality that limit present or prospective use for timber products, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter class.—A classification of trees based on diameter outside bark (d.o.b.), measured at breast height (4½ feet above the ground). D.B.H. is the common abbreviation for "diameter at breast height." Two-inch-diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.00 through 6.99 inches d.b.h., inclusive.

Farm.—Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for the year amounted to at least $250.

Farm operator.—A person who operates a farm, either doing the work himself or directly supervising the work.

Farmer-owned lands.—Lands owned by farm operators.

Forest industry lands.—Lands owned by companies or individuals operating wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest type.—A classification of forest land based upon the species forming a plurality of live-tree stocking.

White-red-jack pine.—Forests in which eastern white pine, red pine, or jack pine, singly or in combination, comprises a plurality of the stocking. (Common associates include hemlock, aspen, birch, and maple.)

Spruce-fir.—Forests in which spruce or true firs, singly or in combination, comprise a plurality of the stocking. (Common associates include white cedar, tamarack, maple, birch, and hemlock.)

Longleaf-slash pine.—Forests in which longleaf or slash pine, singly or in combination, comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Loblolly-shortleaf pine.—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-pine.—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-hickory.—Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-gum-cypress.—Bottomland forest in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.—Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Maple-beech-birch.—Forests in which maple, beech, or yellow birch, singly or in combination, comprises a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

Gross growth.—Annual increase in net volume of trees in the absence of cutting and mortality.

Growing-stock trees.—Live trees of commercial species qualifying as desirable or acceptable trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. (Net volume in primary forks is included.)

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Soft hardwoods.—Soft-textured hardwoods, such as box elder, red and silver maple, hackberry, loblolly-bay, sweetgum, yellow-poplar, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

Hard hardwoods.—Hard-textured hardwoods such as sugar maple, birch, hickory, dogwood, persimmon (forest grown

ck locust, beech, ash, honeylocust, holly, black walnut, lberry, and all commercial oaks.

Idle farmland.—Includes former croplands, orchards, im-ved pastures and farm sites not tended within the past 2 rs, and presently less than 16.6 percent stocked with trees.

Improved pasture.—Land currently improved for grazing cultivation, seeding, irrigation, or clearing of trees or brush.

Industrial wood.—All roundwood products except fuel-od.

Ingrowth.—The number or net volume of trees that grow e enough during a specified year to qualify as saplings, pole-ber, or sawtimber.

Inhibiting vegetation.—Cover sufficiently dense to prevent establishment of tree seedlings.

Land area.—The area of dry land and land temporarily or tly covered by water such as marshes, swamps, and river od plains (omitting tidal flats below mean high tide), streams, ughs, estuaries, and canals less than 1/8 of a statute mile in th, and lakes, reservoirs, and ponds less than 40 acres in area.

Log grade.—A classification of logs based on external char-ristics as indicators of quality or value.

Logging residues.—The unused portions of trees cut or d by logging.

Miscellaneous Federal lands.—Federal lands other than onal Forests, lands administered by the Bureau of Land agement, and Indian lands.

Miscellaneous private lands—corporate.—Lands owned by te corporations other than forest industry.

Miscellaneous private lands—individual.—Privately owned s other than forest industry, farmer-owned, or corporate ns.

Mortality.—Number or sound-wood volume of live trees g from natural causes during a specified period.

National Forest land.—Federal lands which have been ly designated as National Forests or purchase units, and h lands under the administration of the Forest Service, in-ng experimental areas and Bankhead-Jones Title III lands.

Net annual growth.—The increase in volume for a specific a

Net volume.—Gross volume of wood less deductions for rot, e), or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land capable of yielding crops of industrial wood because of adverse te nditions, and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small ze poor form, or inferior quality which normally do not ev p into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests and land formerly forested where timber production is precluded by development for other uses.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other Federal lands.—Federal lands other than National Forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and other Federal agencies.

Other public lands.—Publicly owned lands other than National Forests.

Other removals.—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber stand improvement, land clearing, and other changes in land use that result in the removal of the trees from the commercial forest.

Overstocked areas.—Areas where growth of trees is significantly reduced by excessive numbers of trees.

Plant byproducts.—Wood products such as pulp chips, obtained incidental to production of other manufactured products.

Plant residues.—Wood materials from manufacturing plants not utilized for some product.

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute or administrative designation.

Quality class.—A classification of sawtimber volumes by log or tree grades.

Rangeland.—Land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross tree volume in sound material.

Rough trees.—(a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Roundwood products.—Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Salvable dead trees.—Standing or down dead trees that are considered merchantable by Forest Survey standards.

Saplings.—Live trees 1.0 inch to 5.0 inches in diameter at breast height.

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion.—That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.—Live trees of commercial species containing at least a 12-foot saw log, or two contiguous saw logs, each 8 feet or longer, and with at least one-third of the gross board-foot volume between the 1-foot stump and minimum saw-log top being sound. Softwoods must be at least 9.0 inches and hardwoods at least 11.0 inches in diameter at breast height.

Sawtimber volume.—Net volume of the saw-log portion of live sawtimber in board-foot International ¼-inch rule.

Seedlings.—Live trees less than 1.0 inch in diameter at breast height that are expected to survive and develop.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Class 1.—Sites capable of producing 165 or more cubic feet per acre annually.

Class 2.—Sites capable of producing 120 to 165 cubic feet per acre annually.

Class 3.—Sites capable of producing 85 to 120 cubic feet per acre annually.

Class 4.—Sites capable of producing 50 to 85 cubic feet per acre annually.

Class 5.—Sites incapable of producing 50 cubic feet per acre annually, but excluding unproductive sites.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Pines.—Yellow pine species which include loblolly, longleaf, slash, pond, shortleaf, pitch, Virginia, and Table-Mountain pine.

Other softwoods.—Cypress, eastern redcedar, white cedar, eastern white pine, eastern hemlock, spruce, and fir.

Stand-size class.—A classification of forest land based the diameter class of growing-stock trees on the area.

Sawtimber stands.—Stands at least 16.7 percent stock with growing-stock trees, with half or more of to stocking in sawtimber and pole-timber trees, and w sawtimber stocking at least equal to poletimber stocki

Poletimber stands.—Stands at least 16.7 percent stock with growing-stock trees of which half or more of t stocking is in poletimber and sawtimber trees, and w poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands at least 16.7 perc stocked with growing-stock trees of which more than h of the stocking is saplings and seedlings.

State, county, and municipal lands.—Lands owned States, counties, and local public agencies or municipalities, lands leased to these governmental units for 50 years or mo

Stocking.—The degree of occupancy of land by tr measured by basal area or the number of trees in a stand spacing in the stand, compared to a minimum standard, depe ing on tree size, to fully utilize the growth potential of the la (See table at end of definitions.)

Fully stocked.—100 percent or more stocking

Medium stocked.—60 to 100 percent stocking

Poorly stocked.—Less than 60 percent stocking

Survivor growth.—The increase in volume of grow stock trees that survive cutting and mortality for a speci year.

Timber products.—Roundwood products and plant products.

Timber removals.—The net volume of growing-stock t removed from the inventory by harvesting; cultural operati such as stand improvement; land clearing, or changes in land

Unproductive forest land.—Forest land incapable of ducing 20 cubic feet per acre of industrial wood under nat conditions, because of adverse site conditions.

Upper-stem portion.—That part of the main stem or for sawtimber trees above the saw-log top to a minimum top ameter 4.0 inches outside bark or to the point where the s stem or fork breaks into limbs.

Urban and other areas.—Areas within the legal bound of cities and towns, suburban areas developed for resider industrial, or recreational purposes; school yards, cemete roads; railroads; airports; beaches; powerlines and other right way; or other nonforest land not included in any other spec land use class.

Stocking Standard

D.b.h. class	Minimum number of trees per acre for full stocking	Minimum basal area per acre for full stocking	Percent stocking assigned each tally tree[1]
Seedlings	600	–	5.0
2	560	–	5.4
4	460	–	6.5
6	340	67	5.8
8	240	84	4.8
10	155	85	4.3
12	115	90	4.0
14	90	96	3.8
16	72	101	3.7
18	60	106	3.5
20	51	111	3.5

[1] Trees less than 5.0 inches d.b.h. were tallied on a 10-point cluster of circular, 1/300-acre plots at each sample location. Trees 5.0 inches d.b.h. and larger were tallied on a 10-point cluster of variable plots using a basal area factor of 37.5 at each sample location.

Overstocked–over 130 percent.
Fully stocked–100–130 percent
Medium stocked–60–99 percent
Poorly stocked–16.7–59 percent
Nonstocked–less than 16.7 percent

Conversion Factors
Cubic feet of wood per average cord (excluding bark)

D.b.h.	Pine	Other softwoods	Hardwood
6	61.0	68.2	10.0
8	68.1	76.0	68.4
10	73.1	81.4	73.4
12	76.7	85.2	76.4
14	79.4	88.2	78.4
16	81.6	90.4	79.8
18	83.3	92.3	80.8
20	84.8	93.8	81.5
22	86.0	95.1	82.1
24+	87.4	97.5	83.1
Average	72.1	83.7	74.2

Rough cords per M cubic feet (without bark) =

$$a + b\left(\frac{1}{\text{D.b.h.}}\right) + c\left(\frac{1}{\text{D.b.h.}}\right)^2$$

Where	*Pine*	*Other softwoods*	*Hardwood*
a =	10.01850	9.15960	11.68410
b =	34.42135	28.75793	3.74431
c =	22.73994	25.54418	157.39417

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Table 1. – Area by land classes, Virginia, 1977

Land class	Area
	Acres
orest land:	
Commercial	15,972,793
Productive-reserved	374,561
Unproductive	70,025
Total	16,417,379
onforest land:	
Cropland	3,098,623
Pasture and range	3,641,844
Other[1]	2,354,550
Total	9,095,017
ll land[2]	25,512,396

[1]Includes swampland, industrial and urban eas, other nonforest land, and 215,894 acres ıssed as water by Forest Survey standards but fined by Bureau of Census as land.
[2]From U.S. Bureau of the Census, Land d Water Area of the United States, 1970.

e 2. – Area of commercial forest land, by ownership classes, Virginia, 1977

Ownership class	Area
	Acres
t.ıal Forest	1,457,989
ı Federal:	
Ireau of Land Management	–
Ilian	485
Ncellaneous Federal	245,126
Total other Federal	245,611
t	183,345
uıy and municipal	68,985
re industry[1]	1,669,618
rn -owned	6,209,938
scaneous private:	
Iıividual	4,971,914
Cporate	1,165,393
Total miscellaneous private	6,137,307
o ıerships	15,972,793

[1]It including 13,996 acres of farmer-owned and scellneous private lands leased to forest industry.

Table 3. – Area of commercial forest land, by stand-size and ownership classes, Virginia, 1977

Stand-size class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
			Acres		
Sawtimber	6,355,494	670,765	257,089	483,467	4,944,173
Poletimber	6,004,554	583,285	172,848	517,703	4,730,718
Sapling and seedling	3,360,391	172,408	59,283	632,477	2,496,223
Nonstocked	252,354	31,531	8,721	35,971	176,131
All classes	15,972,793	1,457,989	497,941	1,669,618	12,347,245

Table 4. – Area of commercial forest land, by stand volume and ownership classes, Virginia, 1977

Stand volume per acre[1]	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
			Acres		
Less than 1,500 fbm	5,955,853	475,415	201,476	891,780	4,387,182
1,500 to 5,000 fbm	6,087,613	608,024	116,880	396,418	4,966,291
More than 5,000 fbm	3,929,327	374,550	179,585	381,420	2,993,772
All classes	15,972,793	1,457,989	497,941	1,669,618	12,347,245

[1]International ¼-inch rule.

Table 5. – Area of commercial forest land, by stocking classes based on selected stand components, Virginia, 1977

Stocking percentage	Stocking classified in terms of:					
	All live trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegegation
		Total	Desirable	Acceptable		
				Acres		
160	–	-				
150-159	52,473	16,150		6,253		
140-149	124,886	66,119	-	21,500		
130-139	1,825,604	353,333	10,797	100,587		-
120-129	1,615,796	546,647	20,655	130,658	5,471	-
110-119	2,344,921	944,262	10,812	362,516	9,725	
100-109	4,569,685	1,900,962	286,031	545,418	21,699	-
90-99	2,040,531	2,056,155	96,221	802,048	95,328	6,552
80-89	1,397,976	2,274,483	193,403	1,269,117	170,438	4,440
70-79	865,627	2,125,597	287,826	1,563,873	314,488	8,121
60-69	520,493	1,901,905	431,206	1,967,008	505,794	17,793
50-59	256,033	1,363,167	739,997	2,209,870	909,887	30,712
40-49	155,693	925,414	1,245,871	2,131,758	1,402,293	46,002
30-39	72,465	743,576	1,913,043	1,700,445	1,967,471	121,879
20-29	39,818	383,385	2,207,504	1,373,625	2,578,817	219,130
10-19	37,474	211,750	2,546,592	798,726	3,301,970	645,743
Less than 10	53,318	159,888	5,982,835	989,391	4,689,412	14,872,421
Total	15,972,793	15,972,793	15,972,793	15,972,793	15,972,793	15,972 793

Table 6. Area of commercial forest land, by ownership and stocking classes[1] with percent occupancy by selected stand components, Virginia, 1977

Ownership and stocking class	Area	Stand components					
		Growing-stock trees			Rough and rotten trees	Inhibiting vegetation	Nonstocked
		Total	Desirable	Acceptable			
	Acres	*Percent of area*					
National Forest:							
Fully stocked stands	194,482	92.4	18.2	74.2	7.6	–	
Medium stocked stands	752,073	70.2	15.0	55.2	27.1	0.8	1.9
Poorly stocked stands	511,434	39.5	4.2	35.3	48.5	4.3	7.7
All stands	1,457,989	62.8	11.8	51.0	31.7	1.9	3.6
Other public:							
Fully stocked stands	152,472	94.0	31.1	62.9	6.0		
Medium stocked stands	226,975	75.4	20.2	55.2	21.5	1.1	2.0
Poorly stocked stands	118,494	35.7	8.5	27.2	40.8	9.2	14.3
All stands	497,941	73.1	21.3	51.8	20.4	2.5	4.0
Forest industry:							
Fully stocked stands	709,481	95.4	41.8	53.6	4.6		-
Medium stocked stands	662,332	75.9	27.0	48.9	21.2	0.8	2.1
Poorly stocked stands	297,805	39.4	14.2	25.2	35.4	4.8	20.4
All stands	1,669,618	78.9	31.6	47.3	15.9	1.1	4.1
Farmer & misc. private							
Fully stocked stands	2,771,038	93.5	29.4	64.1	6.5	-	
Medium stocked stands	6,716,760	75.2	22.6	52.6	20.5	1.2	3.1
Poorly stocked stands	2,859,447	39.8	11.7	28.1	41.6	7.2	11.4
All stands	12,347,245	72.6	22.1	50.5	21.2	2.2	4.0
All ownerships:							
Fully stocked stands	3,827,473	93.9	31.5	62.4	6.1	–	
Medium stocked stands	8,358,140	74.9	22.3	52.6	21.1	1.2	2.8
Poorly stocked stands	3,787,180	39.5	10.8	28.7	41.9	6.8	11.8
All stands	15,972,793	72.6	22.4	50.2	21.4	2.0	4.0

[1] Based on degree of growing-stock stocking.

Table 7. – Area of commercial forest land, by site and ownership classes, Virginia, 1977

Site class	All ownerships	National Forest	Other public	Forest industry	Farmer and misc. private
	Acres				
165 ft^3 or more	21,903			-	21,903
120 to 165 ft^3	127,697	8,936	6,000	16,169	96,592
85 to 120 ft^3	1,701,667	35,105	74,277	193,554	1,398,731
50 to 85 ft^3	10,777,825	638,460	355,515	1,296,923	8,486,927
Less than 50 ft^3	3,343,701	775,488	62,149	162,972	2,343,092
All classes	15,972,793	1,457,989	497,941	1,669,618	12,347,245

Table 8. – Area of commercial forest lan by forest types and ownership classes, Virginia, 1977

Type	All ownerships	Public	Private
	Acres		
Softwood types:			
White pine-hemlock	152,109	12,826	139,28
Loblolly pine	1,575,469	55,302	1,520,16
Shortleaf pine	287,724	14,561	273,16
Virginia pine	1,216,610	68,320	1,148,29
Eastern redcedar	76,067	3,097	72,97
Pond pine	2,590		2,59
Pitch pine	83,826	47,789	36,0
Table-Mountain pine	43,093	22,212	20,88
Total	3,437,488	224,107	3,213,38
Hardwood types:			
Oak-pine	1,931,626	174,804	1,756,82
Oak-hickory	9,284,511	1,320,386	7,964,12
Chestnut oak	475,553	205,831	269,72
Oak-gum-cypress	363,975	9,447	354,52
Elm-ash-cottonwood	349,328	8,070	341,25
Maple-beech-birch	130,312	13,285	117,02
Total	12,535,305	1,731,823	10,803,48
All types	15,972,793	1,955,930	14,016,86

Table 9. – Area of noncommercial forest land, by forest types, Virginia, 1977

Type	All areas	Productive-reserved areas	Unproductive areas
		Acres	
Loblolly-shortleaf pine	27,110	27,110	
Oak-pine	9,786	9,786	
Oak-hickory	361,298	291,273	70,025
Oak-gum-cypress	46,392	46,392	
All types	444,586	374,561	70,025

Table 10. – Number of growing-stock trees on commercial forest land, by species and diameter class, 1977

Species	All classes	Diameter class (inches at breast height)									
		5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	29.0 and larger
					Thousand trees						
wood:											
ngleaf pine	–										
sh pine	–	–									
rtleaf pine	89,357	36,896	27,107	15,063	6,837	2,487	683	166	81	37	
blolly pine	227,840	104,500	52,741	29,339	19,581	11,290	6,055	2,717	1,018	593	6
d pine	1,050	101	242	167	268	111	92	41	26	–	2
ginia pine	242,001	116,582	74,082	34,029	12,998	3,429	718	121	33	9	
ch pine	26,818	6,958	6,500	6,067	4,018	1,988	828	356	56	47	
ple-Mountain pine	10,848	4,175	2,901	1,914	983	639	149	64	23		
uce pine	–		–								
d pine								–			
tern white pine	31,956	10,683	7,568	5,163	3,283	2,568	1,360	666	321	331	13
tern hemlock	10,160	3,941	2,333	1,386	859	673	292	286	149	188	53
uce and fir	253		116	30	76	19	12		–	–	
dcypress	1,365	139	133	174	233	241	162	65	85	117	16
dcypress	108			17	26	–	15	25	5	16	4
ars	19,024	13,336	4,130	1,146	287	101	11	13			
tal softwoods	660,780	297,311	177,853	94,495	49,449	23,546	10,377	4,520	1,797	1,338	94
dwood											
ct white oaks[1]	193,398	70,094	45,861	30,818	19,230	12,446	7,347	3,805	1,892	1,773	132
ct red oaks[2]	61,597	17,690	13,306	9,222	7,465	5,418	3,179	1,964	1,351	1,758	244
stnut oak	143,045	49,728	35,754	22,427	13,625	8,738	5,849	3,152	1,720	1,909	143
er white oaks	11,930	5,054	2,948	1,540	1,144	790	224	67	84	67	12
er red oaks	210,274	73,584	52,300	35,158	20,955	13,882	7,336	3,667	1,737	1,521	134
kory	107,627	42,578	26,117	17,612	9,538	5,905	3,114	1,619	607	504	33
llow birch	377	90	137	29	–	42	28	34		17	
d maple	11,501	4,692	2,660	1,810	939	542	394	207	137	110	10
. maple	90,339	41,843	21,601	13,067	6,464	3,180	2,075	1,023	497	550	39
ech	20,795	7,367	3,640	2,804	2,234	1,612	1,176	858	533	529	42
etgum	79,024	35,615	19,471	10,866	6,252	3,496	1,670	851	422	365	16
lo and blackgum	33,271	13,945	7,022	5,138	3,075	2,002	1,147	470	215	237	20
sh	16,075	6,061	3,676	2,232	1,820	1,093	676	281	103	115	18
onwood	417	143	145	71	16		23		–	19	
dwood	6,074	1,203	1,231	1,080	1,070	634	428	201	78	142	7
w-poplar	157,832	49,859	34,088	26,922	19,669	12,635	7,290	3,849	1,731	1,676	113
nd magnolia	8,490	3,652	2,661	1,281	458	212	57	39	82	44	4
k cherry	3,460	1,490	921	395	281	228	64	44	15	22	
k walnut	6,775	2,210	1,719	928	842	551	255	157	85	15	13
more	6,947	1,219	1,429	1,087	1,325	662	521	266	174	226	38
k locust	20,036	6,116	6,448	3,899	1,946	969	393	161	50	54	
m	9,112	3,589	2,808	1,132	679	391	272	77	79	75	10
er eastern hardwoods	36,132	16,227	9,094	4,935	2,563	1,611	760	420	189	313	20
tal hardwoods	1,234,528	454,049	295,037	194,453	121,590	77,039	44,278	23,212	11,781	12,041	1,048
l species	1,895,308	751,360	472,890	288,948	171,039	100,585	54,655	27,732	13,578	13,379	1,142

[1] Includes white, swamp white, swamp chestnut, and chinkapin oaks.
[2] Includes cherrybark and northern red oaks.

Table 11. – Volume of timber on commercial forest land, by class of timber and by softwood and hardwood, Virginia, 1977

Class of timber	All species	Softwood	Hardwood
	Thousand cubic feet		
Sawtimber trees:			
Saw-log portion	10,337,732	2,986,008	7,351,724
Upper-stem portion	2,071,165	571,660	1,499,505
Total	12,408,897	3,557,668	8,851,229
Poletimber trees	7,247,563	1,954,428	5,293,135
All growing-stock trees	19,656,460	5,512,096	14,144,364
Rough trees:			
Sawtimber-size trees	1,276,365	72,797	1,203,568
Poletimber-size trees	1,754,610	108,207	1,646,403
Total	3,030,975	181,004	2,849,971
Rotten trees:			
Sawtimber-size trees	398,888	5,702	393,186
Poletimber-size trees	58,974	848	58,126
Total	457,862	6,550	451,312
Salvable dead trees:			
Sawtimber-size trees	18,342	10,597	7,745
Poletimber-size trees	20,798	12,708	8,090
Total	39,140	23,305	15,835
Total, all timber	23,184,437	5,722,955	17,461,482

Table 12. – Volume of growing stock and sawtimber on commercial forest land, by ownership classes, and by softwood and hardwood, Virginia, 1977

Ownership class	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet			*Thousand board feet*[1]		
National Forest	1,802,592	290,444	1,512,148	4,978,218	1,023,726	3,954,492
Other public	820,855	275,232	545,623	2,423,338	824,818	1,598,520
Forest industry	1,810,739	877,157	933,582	5,041,372	2,589,548	2,451,824
Farmer and misc. private	15,222,274	4,069,263	11,153,011	41,327,707	11,695,993	29,631,714
All ownerships	19,656,460	5,512,096	14,144,364	53,770,635	16,134,085	37,636,550

[1] International ¼-inch rule.

Table 13. – Volume of growing stock on commercial forest land, by species and diameter class, 1977

Species	All classes	Diameter class (inches at breast height)									
		5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	29.0 and larger
	Thousand cubic feet										
twood:											
ongleaf pine											
lash pine											
hortleaf pine	709,143	95,544	181,993	186,595	130,476	70,136	27,127	8,461	5,095	3,716	
oblolly pine	2,199,901	252,144	335,776	365,007	395,307	332,636	244,247	145,320	70,844	57,345	1,275
ond pine	16,610	299	1,341	1,705	3,856	2,880	3,115	1,421	1,713		280
irginia pine	1,622,138	347,199	507,093	410,643	235,477	88,855	24,818	5,447	1,931	675	
itch pine	272,179	16,171	35,692	59,730	62,418	46,679	28,417	16,289	3,084	3,699	--
able-Mountain pine	93,440	13,703	18,457	22,231	16,442	14,355	4,114	2,870	1,268		
pruce pine											
and pine											
astern white pine	359,796	28,147	47,630	54,697	53,574	59,135	42,549	28,794	17,664	25,517	2,089
astern hemlock	119,941	9,058	12,295	12,475	11,442	15,511	9,954	12,539	8,050	17,975	10,642
pruce and fir	3,252		474	470	1,381	500	427				
aldcypress	44,227	649	1,034	2,365	4,725	7,468	6,762	3,289	5,127	10,056	2,752
ondcypress	4,610			198	557		574	1,173	286	1,176	646
edars	66,859	28,841	20,888	10,419	3,782	2,261	275	393			
Total softwoods	5,512,096	791,755	1,162,673	1,126,535	919,437	640,416	392,379	225,996	115,062	120,159	17,684
rdwood.											
elect white oaks[1]	2,263,647	197,252	283,839	349,214	350,217	330,292	268,939	182,977	116,785	158,450	25,682
elect red oaks[2]	1,019,982	58,028	87,830	106,136	134,383	142,448	113,518	94,224	80,242	158,889	44,284
hestnut oak	1,615,193	138,771	209,598	236,352	225,780	209,883	189,622	134,252	93,120	152,563	25,252
ther white oaks	104,058	12,951	16,249	14,923	18,797	19,103	7,284	2,825	4,872	5,577	1,477
ther red oaks	2,296,348	208,887	315,662	380,277	361,926	345,875	256,653	169,829	103,945	130,037	23,257
ickory	1,089,704	113,273	153,584	191,810	173,573	159,535	118,063	84,002	39,436	49,967	6,146
ellow birch	6,628	422	1,158	320	--	870	928	1,399		1,531	
ard maple	134,256	15,697	17,581	20,609	17,499	14,198	14,649	10,507	9,791	11,211	2,514
oft maple	808,074	130,900	137,539	148,899	114,851	80,761	71,216	45,348	28,171	43,322	7,067
eech	342,314	21,655	22,958	32,509	42,904	43,795	43,663	42,870	34,514	49,609	7,837
weetgum	739,886	80,462	121,001	130,408	128,304	103,887	67,010	45,060	27,941	32,622	3,191
upelo and blackgum	336,158	36,957	42,694	54,497	56,714	51,339	39,172	20,016	12,048	18,469	4,252
sh	188,261	18,127	23,938	26,142	33,970	29,487	24,044	13,928	6,079	9,578	2,968
ottonwood	5,117	610	1,101	803	340	--	975			1,288	
asswood	111,805	4,162	8,970	13,311	21,363	18,327	17,078	10,204	4,932	12,220	1,238
ellow-poplar	2,163,441	149,564	225,499	320,760	376,724	347,115	272,754	191,265	108,872	148,739	22,149
ly and magnolia	68,332	9,615	16,512	14,245	8,401	6,134	2,064	1,944	4,785	4,122	510
ack cherry	31,872	4,104	5,609	3,958	5,398	5,960	2,103	2,154	1,029	1,557	
ack walnut	77,145	6,650	10,465	9,345	13,635	13,013	8,328	7,200	5,191	1,465	1,853
ycamore	139,247	4,719	10,791	14,257	25,601	17,559	18,535	12,038	10,069	19,121	6,557
ack locust	174,091	16,732	37,138	39,432	32,416	22,530	12,799	6,426	2,726	3,892	--
m	91,825	9,427	17,308	12,995	13,202	10,653	10,318	4,273	4,908	6,921	1,820
ther eastern hardwoods	336,980	49,892	60,285	55,767	46,013	39,083	26,415	19,324	10,675	25,878	3,648
Total hardwoods	14,144,364	1,288,857	1,827,309	2,176,969	2,202,011	2,011,847	1,586,130	1,102,065	710,131	1,047,028	192,017
l species	19,656,460	2,080,612	2,989,982	3,303,504	3,121,448	2,652,263	1,978,509	1,328,061	825,193	1,167,187	209,701

[1] Includes white, swamp white, swamp chestnut, and chinkapin oaks.
[2] Includes cherrybark and northern red oaks.

Table 14. – Volume of sawtimber on commercial forest land, by species and diameter class, 1977

Species	All classes	Diameter class (inches at breast height) 9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	29.0 and larger
	Thousand board feet								
Softwood:									
Longleaf pine	–	–	–	–	–	–	–	–	–
Slash pine	–	–	–	–	–	–	–	–	–
Shortleaf pine	1,881,146	686,858	583,154	355,417	150,826	49,581	31,231	24,079	–
Loblolly pine	7,751,088	1,287,517	1,747,918	1,682,628	1,349,634	857,816	439,599	376,894	9,082
Pond pine	75,787	6,491	17,023	14,581	17,107	8,218	10,381		1,986
Virginia pine	2,957,684	1,421,038	966,733	406,110	121,490	28,145	10,363	3,805	
Pitch pine	985,602	196,809	263,652	230,402	155,715	95,586	19,221	24,217	
Table-Mountain pine	287,431	88,727	76,547	74,457	23,001	16,829	7,870	–	–
Spruce pine	–	–	–	–	–	–			
Sand pine	–	–	–	–	–	–	–		
Eastern white pine	1,365,031	195,829	231,362	286,325	222,052	158,797	102,056	154,970	13,640
Eastern hemlock	505,339	42,295	46,972	72,516	50,884	68,035	45,654	109,252	29,731
Spruce and fir	12,432	1,808	5,839	2,424	2,361	–	–	–	–
Baldcypress	212,091	7,152	17,630	32,769	32,636	16,806	27,988	58,859	18,251
Pondcypress	24,420	696	2,265	–	2,867	6,152	1,587	6,813	4,040
Cedars	76,034	42,251	17,927	12,002	1,516	2,338	–		
Total softwoods	16,134,085	3,977,471	3,977,022	3,169,631	2,130,089	1,308,303	695,950	758,889	116,730
Hardwood:									
Select white oaks[1]	5,997,793		1,143,541	1,274,184	1,156,476	851,163	575,881	842,415	154,133
Select red oaks[2]	3,241,014	–	432,641	530,448	463,515	413,581	369,600	790,584	240,645
Chestnut oak	4,244,121	–	712,353	780,463	785,713	600,171	440,631	781,487	143,303
Other white oaks	262,364	–	67,571	80,218	33,818	14,109	25,744	31,856	9,048
Other red oaks	5,838,186	–	1,187,991	1,349,257	1,122,627	805,214	520,866	709,597	142,634
Hickory	2,700,331	–	585,987	643,089	533,638	411,465	204,449	281,544	40,159
Yellow birch	19,621	–		3,335	3,768	5,795	–	6,723	–
Hard maple	347,889	–	64,026	57,352	63,160	47,832	46,041	56,052	13,426
Soft maple	1,554,547	–	361,162	300,419	295,223	203,008	133,821	220,376	40,538
Beech	1,043,407	–	157,619	166,596	170,383	170,690	139,449	205,307	33,363
Sweetgum	1,832,656	–	457,176	444,723	322,417	235,547	155,895	195,135	21,763
Tupelo and blackgum	814,777	–	175,247	194,184	164,991	92,559	60,230	99,114	28,452
Ash	490,038	–	111,039	113,448	103,071	64,808	29,836	50,542	17,294
Cottonwood	12,056	–	995	–	4,248	–	–	6,813	
Basswood	358,401	–	73,900	71,624	73,054	46,672	23,643	62,625	6,883
Yellow-poplar	6,812,275	–	1,330,795	1,484,046	1,319,226	1,009,190	612,592	904,732	151,694
Bay and magnolia	143,553	–	28,741	28,290	11,012	11,190	30,589	29,666	4,065
Black cherry	74,371	–	18,609	23,812	9,127	9,847	5,105	7,871	
Black walnut	177,837	–	47,095	45,414	29,326	25,531	18,499	5,266	6,706
Sycamore	475,877	–	79,200	66,312	79,598	56,282	50,169	103,999	40,317
Black locust	293,757	–	114,274	81,852	47,683	24,317	10,467	15,164	–
Elm	217,786	–	44,861	41,119	43,590	19,412	23,410	35,276	10,118
Other eastern hardwoods	683,893	–	155,491	147,142	107,543	82,543	47,680	123,054	20,440
Total hardwoods	37,636,550	–	7,350,314	7,927,327	6,943,207	5,200,926	3,524,597	5,565,198	1,124,981
All species	53,770,635	3,977,471	11,327,336	11,096,958	9,073,296	6,509,229	4,220,547	6,324,087	1,241,711

[1] Includes white, swamp white, swamp chestnut and chinkapin oaks.
[2] Includes cherrybark and northern red oaks.

Table 15. — Volume of sawtimber on commercial forest land, by species and quality classes, Virginia, 1977

Species	All grades	Log grade			
		1	2	3	4
	Thousand board feet				
Softwood:					
Yellow pines[1]	13,938,738	446,001	2,679,632	10,813,105	([2])
Eastern white pine[3]	1,365,031	110,758	68,252	637,529	548,492
Cypress[3]	236,511	54,560	59,955	121,996	
Spruce and fir[3]	12,432	401	622	6,128	5,281
Other eastern softwoods[3]	581,373	58,404	25,267	260,728	236,974
Total	16,134,085	670,124	2,833,728	11,839,486	790,747
Hardwood:[4]					
Select white and red oaks	9,238,807	1,103,261	1,867,868	3,460,590	2,807,088
Other white and red oaks	10,344,671	899,719	1,476,003	4,123,736	3,845,213
Hickory	2,700,331	132,413	316,411	999,122	1,252,385
Yellow birch	19,621	1,140	3,457	7,175	7,849
Hard maple	347,889	49,832	103,555	137,463	57,039
Sweetgum	1,832,656	139,614	239,111	703,986	749,945
Ash, walnut, and black cherry	742,246	106,490	139,773	411,210	84,773
Yellow-poplar	6,812,275	439,718	556,808	2,083,656	3,732,093
Other hardwoods	5,598,054	231,632	799,147	2,328,054	2,239,221
Total	37,636,550	3,103,819	5,502,133	14,254,992	14,775,606
All species	53,770,635	3,773,943	8,335,861	26,094,478	15,566,353

[1] Based on Southern Pine Log Grades for Yard and Structural Lumber, Research Paper SE-39, published by the Southeastern Forest Experiment Station in 1968.

[2] Not applicable.

[3] Based on Trial Log Grades for Eastern White Pine prepared by the Northeastern Forest Experiment Station in 1960.

[4] Graded according to Hardwood Log Grades for Standard Lumber published by the U. S. Forest Products Laboratory in 1953. Specifications for the grade 4 tie and timber logs are based chiefly on knot size and log soundness.

Table 16. — Net annual growth and removals of growing stock on commercial forest land, by species, Virginia, 1976

Species	Net annual growth	Annual timber removals
	Thousand cubic feet	
Softwood:		
Yellow pines	220,877	196,222
Eastern white pine	18,164	5,683
Spruce and fir	136	
Cypress	1,564	1,087
Other eastern softwoods	6,464	2,233
Total softwoods	247,205	205,225
Hardwood:		
Select white and red oaks	127,670	79,748
Other white and red oaks	144,331	78,792
Hickory	34,282	22,376
Yellow birch	92	
Hard maple	4,267	1,239
Sweetgum	28,312	17,984
Ash, walnut, and black cherry	12,650	3,138
Yellow-poplar	129,869	48,752
Tupelo and blackgum	8,839	9,897
Other eastern hardwoods	85,651	28,847
Total hardwoods	575,963	290,773
All species	823,168	495,998

Table 17. — Net annual growth and removals of growing stock on commercial forest land, by ownership classes and by softwood and hardwood, Virginia, 1976

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand cubic feet					
National Forest	55,405	6,717	48,688	21,752	5,074	16,678
Other public	31,452	10,771	20,681	22,298	10,311	11,987
Forest industry	95,156	52,288	42,868	80,976	46,303	34,673
Farmer and misc. private	641,155	177,429	463,726	370,972	143,537	227,435
All ownerships	823,168	247,205	575,963	495,998	205,225	290,773

Table 18. – Net annual growth and removals of sawtimber on commercial forest land, by species, Virginia, 1976

Species	Net annual growth	Annual timber removals
	Thousand board feet	
Softwood:		
Yellow pines	712,885	676,340
Eastern white pine	80,536	23,704
Spruce and fir	918	–
Cypress	10,185	6,176
Other eastern softwoods	21,895	8,288
Total softwoods	826,419	714,508
Hardwood:		
Select white and red oaks	446,215	251,717
Other white and red oaks	515,024	256,230
Hickory	112,812	82,349
Yellow birch	279	–
Hard maple	12,710	2,893
Sweetgum	76,297	61,516
Ash, walnut, and black cherry	34,479	4,980
Yellow-poplar	518,849	186,431
Tupelo and blackgum	23,219	32,229
Other eastern hardwoods	222,503	87,629
Total hardwoods	1,962,387	965,974
All species	2,788,806	1,680,482

Table 20. – Mortality of growing stock and sawtimber on commercial forest land, by species, Virginia, 1976

Species	Growing stock	Sawtimber
	M cubic feet	*M board feet*
Softwood:		
Yellow pines	60,492	134,056
Eastern white pine	992	1,718
Spruce and fir	–	–
Cypress	–	–
Other eastern softwoods	725	408
Total softwoods	62,209	136,182
Hardwood:		
Select white and red oaks	10,015	28,279
Other white and red oaks	19,548	48,915
Hickory	4,409	15,732
Yellow birch		
Hard maple	253	–
Sweetgum	3,345	6,483
Ash, walnut, and black cherry	1,633	3,277
Yellow-poplar	4,502	7,176
Tupelo and blackgum	1,340	2,842
Other eastern hardwoods	12,290	21,165
Total hardwoods	57,335	133,869
All species	119,544	270,051

Table 19. – Net annual growth and removals of sawtimber on co mercial forest land, by ownership classes, and by softwood a hardwood, Virginia, 1977

Ownership class	Net annual growth			Annual timber removals		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard wooc
	Thousand board feet					
National Forest	197,627	27,943	169,684	62,134	17,447	44,6
Other public	115,063	44,557	70,506	84,772	39,410	45,3
Forest industry	256,791	127,628	129,163	269,191	167,221	101,9
Farmer and misc. private	2,219,325	626,291	1,593,034	1,264,385	490,430	773,9
All ownerships	2,788,806	826,419	1,962,387	1,680,482	714,508	965,9

Table 21. – Mortality of growing stock and sawtimber on comm cial forest land, by ownership classes, and by softwood and ha wood, Virginia, 1976

Ownership class	Growing stock			Sawtimber		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard wooc
	Thousand cubic feet			*Thousand board feet*		
National Forest	8,171	2,235	5,936	13,238	4,909	8,3
Other public	8,512	4,490	4,022	24,652	12,497	12,1
Forest industry	12,287	7,784	4,503	31,833	21,254	10,5
Farmer and misc. private	90,574	47,700	42,874	200,328	97,522	102,8
All ownerships	119,544	62,209	57,335	270,051	136,182	133,8

Table 22. – Mortality of growing stock and sawtimber on comm cial forest land, by causes and by softwood and hardwood, Virgi 1976

Cause of death	Growing stock			Sawtimber		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Harc woo
	Thousand cubic feet			*Thousand board feet*		
Fire	1,987	407	1,580	4,478	463	4,0
Insects	27,235	26,897	338	81,042	80,470	5
Disease	2,511	981	1,530	10,164	4,411	5,7
Weather	13,666	6,260	7,406	44,808	20,484	24,3
Suppression	22,339	14,573	7,766	6,563	4,557	2,0
Animals	745	–	745	1,628	–	1,6
Undetermined	51,061	13,091	37,970	121,368	25,797	95,5
All causes	119,544	62,209	57,335	270,051	136,182	133,8

Table 23. – Output of timber products, by product, by source of material, and by softwood and hardwood, Virginia, 1976

Product and species group	Standard units	Total output		Roundwood products		Plant byproducts	
		Number of units	Thousand cu. ft.	Number of units	Thousand cu. ft.	Number of units	Thousand cu. ft.
Saw logs:							
Softwood	M fbm[1]	450,351	84,629	426,564	80,157	23,787	4,472
Hardwood	M fbm[1]	586,966	109,135	586,934	109,129	32	6
Total	M fbm[1]	1,037,317	193,764	1,013,498	189,286	23,819	4,478
Veneer logs and bolts:							
Softwood	M fbm[1]	50,836	8,273	50,836	8,273	–	–
Hardwood	M fbm[1]	18,316	2,693	18,316	2,693	–	–
Total	M fbm[1]	69,152	10,966	69,152	10,966	–	–
Pulpwood:[2]							
Softwood	Stand. cords[3]	1,366,086	99,827	1,011,057	73,875	355,029	25,952
Hardwood	Stand. cords[3]	1,295,660	98,944	983,065	75,062	312,595	23,882
Total	Stand. cords[3]	2,661,746	198,771	1,994,122	148,937	667,624	49,834
Cooperage logs and bolts:							
Softwood	M fbm[1]	–	–	–	–	–	–
Hardwood	M fbm[1]	1,779	281	1,779	281	–	–
Total	M fbm[1]	1,779	281	1,779	281	–	–
Poles and piling:							
Softwood	M pieces	58	1,633	58	1,633	–	–
Hardwood	M pieces	–	–	–	–	–	–
Total	M pieces	58	1,633	58	1,633	–	–
Posts (round and split):							
Softwood	M pieces	440	396	440	396	–	–
Hardwood	M pieces	4	4	4	4	–	–
Total	M pieces	444	400	444	400	–	–
Other:[4]							
Softwood	M ft^3	4,842	4,842	1,889	1,889	2,953	2,953
Hardwood	M ft^3	4,574	4,574	2,664	2,664	1,910	1,910
Total	M ft^3	9,416	9,416	4,553	4,553	4,863	4,863
Total industrial products:							
Softwood		–	199,600	–	166,223	–	33,377
Hardwood		–	215,631	–	189,833	–	25,798
Total		–	415,231	–	356,056	–	59,175
Fuelwood:[5]							
Softwood	Stand. cords	547,746	40,040	534,583	39,078	13,163	962
Hardwood	Stand. cords	948,977	72,502	895,668	68,429	53,309	4,073
Total	Stand. cords	1,496,723	112,542	1,430,251	107,507	66,472	5,035
All products:[6]							
Softwood		–	239,640	–	205,301	–	34,339
Hardwood		–	288,133	–	258,262	–	29,871
Total		–	527,773	–	463,563	–	64,210

[1] International ¼-inch rule.

[2] Roundwood figures include 19,056 thousand cubic feet of roundwood chipped at other primary wood-using plants.

[3] Rough-wood basis (includes chips converted to equivalent standard cords).

[4] Includes particleboard, excelsior bolts, and various specialty products.

[5] Excludes 7,249 thousand cubic feet of plant byproducts used for industrial fuel.

[6] Excludes 1,981 thousand cubic feet of plant byproducts used for litter and mulch.

Table 24. – Output of roundwood products, by product, by source, and by softwood and hardwood, Virginia, 1976

Product and species group	All sources	Growing-stock trees[1]			Cull trees[1]	Salvable dead trees[1]	Other sources[2]
		Total	Sawtimber	Poletimber			
	Thousand cubic feet						
Saw logs:							
Softwood	80,157	77,746	73,761	3,985	531		1,880
Hardwood	109,129	100,030	90,116	9,914	7,787		1,312
Total	189,286	177,776	163,877	13,899	8,318		3,192
Veneer logs and bolts:							
Softwood	8,273	8,118	8,118		–	–	155
Hardwood	2,693	2,429	2,429	–	190	–	74
Total	10,966	10,547	10,547	–	190	–	229
Pulpwood:							
Softwood	73,875	62,291	26,936	35,355	3,531	1,027	7,026
Hardwood	75,062	58,213	24,137	34,076	12,489	–	4,360
Total	148,937	120,504	51,073	69,431	16,020	1,027	11,386
Cooperage logs and bolts:							
Softwood	–	–	–	–	–	–	–
Hardwood	281	281	281	–	–	–	–
Total	281	281	281	–	–		
Poles and piling:							
Softwood	1,633	1,586	1,586		–	–	47
Hardwood	–			–	–	–	–
Total	1,633	1,586	1,586			–	47
Posts (round and split):							
Softwood	396	279	72	207	50	–	67
Hardwood	4	3	1	2	–	–	1
Total	400	282	73	209	50	–	68
Other:							
Softwood	1,889	1,010	1,010	–	–	691	188
Hardwood	2,664	2,488	1,915	573	92	–	84
Total	4,553	3,498	2,925	573	92	691	272
Total industrial products:							
Softwood	166,223	151,030	111,483	39,547	4,112	1,718	9,363
Hardwood	189,833	163,444	118,879	44,565	20,558	–	5,831
Total	356,056	314,474	230,362	84,112	24,670	1,718	15,194
Fuelwood:							
Softwood	39,078	22,419	9,014	13,405	–	9,415	7,244
Hardwood	68,429	43,983	17,823	26,160	12,660	2,224	9,562
Total	107,507	66,402	26,837	39,565	12,660	11,639	16,806
All products:							
Softwood	205,301	173,449	120,497	52,952	4,112	11,133	16,607
Hardwood	258,262	207,427	136,702	70,725	33,218	2,224	15,393
Total	463,563	380,876	257,199	123,677	37,330	13,357	32,000

[1] On commercial forest land.

[2] Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas, or material from noncommercial forest land or nonforest land such as fence rows or suburban areas.

Table 25. – Annual timber removals from growing stock on commercial forest land, by items, and by softwood and hardwood, Virginia, 1976

Item	All species	Softwood	Hardwood
	. . . . Thousand cubic feet		
Roundwood products:			
Saw logs	177,776	77,746	100,030
Veneer logs and bolts	10,547	8,118	2,429
Pulpwood	120,504	62,291	58,213
Cooperage logs and bolts	281		281
Poles and piling	1,586	1,586	–
Posts	282	279	3
Other	3,498	1,010	2,488
Fuelwood	66,402	22,419	43,983
All products	380,876	173,449	207,427
Logging residues	46,764	11,850	34,914
Other removals	68,358	19,926	48,432
Total removals	495,998	205,225	290,773

Table 26. – Annual timber removals from live sawtimber on commercial forest land, by items, and by softwood and hardwood, Virginia, 1976

Item	All species	Softwood	Hardwood
	. . . . Thousand board feet		
Roundwood products:			
Saw logs	1,010,895	432,045	578,850
Veneer logs and bolts	73,088	53,772	19,316
Pulpwood	179,932	106,155	73,777
Cooperage logs and bolts	2,235	–	2,235
Poles and piling	8,556	8,556	
Posts	61	60	1
Other	15,466	3,971	11,495
Fuelwood	167,282	52,798	114,484
All products	1,457,515	657,357	800,158
Logging residues	49,294	15,788	33,506
Other removals	173,673	41,363	132,310
Total removals	1,680,482	714,508	965,974

Table 27. – Volume of unused residues at primary manufacturing plants, by industry and type of residue, and by softwood and hardwood, Virginia, 1976

Species group and type of residues	All industries	Lumber	Veneer and plywood	Other
	. . . . . Thousand cubic feet			
Softwoods:				
Coarse[1]	1,516	1,490		26
Fine[2]	4,025	4,025		
Total	5,541	5,515		26
Hardwoods:				
Coarse[1]	3,305	3,236	8	61
Fine[2]	10,056	9,968	43	45
Total	13,361	13,204	51	106
All species:				
Coarse[1]	4,821	4,726	8	87
Fine[2]	14,081	13,993	43	45
Total	18,902	18,719	51	132

[1] Material such as slabs, edgings, and veneer cores.
[2] Material such as sawdust, shavings, and veneer clippings.

Table 28. – Projection of net annual growth, available cut, and inventory of sawtimber and growing stock on commercial forest land, by softwood and hardwood, Virginia, 1976 to 2006[1]

Species group	1976	Projected to		
		1986	1996	2006
	GROWING STOCK (In thousand cubic feet)			
Softwood:				
Cut	205,225	226,800	238,100	233,700
Growth	247,205	255,600	250,800	233,700
Inventory[2]	5,512,096	5,854,000	6,019,800	5,891,700
Hardwood:				
Cut	290,773	458,400	601,700	695,000
Growth	575,963	648,500	695,300	695,000
Inventory[2]	14,144,364	16,474,300	17,743,500	17,598,200
Total:				
Cut	495,998	685,200	839,800	928,700
Growth	823,168	904,100	946,100	928,700
Inventory[2]	19,656,460	22,328,300	23,763,300	23,489,900
	SAWTIMBER (In thousand board feet)			
Softwood:				
Cut	714,508	805,000	881,100	942,500
Growth	826,419	995,100	1,011,200	942,500
Inventory[2]	16,134,085	18,397,500	19,843,800	20,233,500
Hardwood:				
Cut	965,974	1,511,000	2,022,500	2,321,600
Growth	1,962,387	2,183,500	2,336,800	2,321,600
Inventory[2]	37,636,550	45,840,300	50,323,800	49,861,100
Total:				
Cut	1,680,482	2,316,000	2,903,600	3,264,100
Growth	2,788,806	3,178,600	3,348,000	3,264,100
Inventory[2]	53,770,635	64,237,800	70,167,600	70,094,600

[1] Assumptions:
1. There will be no substantial reduction in area of commercial forest land within the next decade. Between 1986 and 2006, area of commercial forest land will decline by 600,000 acres.
2. Forestry progress will continue at the rate indicated by recent trends.
3. Cut starting at the 1976 level will gradually increase and come into balance with growth by 2006.
[2] Inventory as of January 1 of the following year.

Table 29. — Basal area per acre of growing stock and rough and rotten trees 5.0 inches d.b.h. and larger, by forest type and Survey Unit, Virginia, 1977

Forest type	State	Survey Unit				
		Coastal Plain	Southern Piedmont	Northern Piedmont	Northern Mountain	Southern Mountain
	Square feet					
White pine-hemlock:						
Growing stock	61.1		51.9	39.4	58.8	66.4
Rough and rotten trees	13.7	–	16.3		17.1	13.1
All trees	74.8		68.2	39.4	75.9	79.5
Loblolly-shortleaf pine:						
Growing stock	60.8	67.6	54.8	56.4	50.4	52.0
Rough and rotten trees	5.3	4.7	4.0	4.7	15.2	12.2
All trees	66.1	72.3	58.8	61.1	65.6	64.2
Oak-pine:						
Growing stock	52.5	56.1	50.0	47.7	48.9	52.9
Rough and rotten trees	10.5	8.5	8.6	8.7	18.8	16.7
All trees	63.0	64.6	58.6	56.4	67.7	69.6
Oak-hickory:						
Growing stock	55.3	53.9	52.5	60.9	55.1	54.7
Rough and rotten trees	16.5	12.2	12.9	13.4	24.7	20.7
All trees	71.8	66.1	65.4	74.3	79.8	75.4
Oak-gum-cypress:						
Growing stock	67.4	67.6	61.3	63.8		
Rough and rotten trees	30.7	31.3	5.0	33.8		
All trees	98.1	98.9	66.3	97.6	–	–
Elm-ash-cottonwood:						
Growing stock	46.9	49.3	49.3	38.0	41.7	50.0
Rough and rotten trees	19.7	21.0	16.3	22.4	23.8	28.8
All trees	66.6	70.3	65.6	60.4	65.5	78.8
Maple-beech-birch:						
Growing stock	61.2			–	55.4	62.2
Rough and rotten trees	23.4	–	–	–	38.5	20.7
All trees	84.6		–		93.9	82.9
All types:						
Growing stock	56.4	59.9	52.8	58.0	53.8	55.1
Rough and rotten trees	13.8	11.0	10.1	11.3	23.2	19.8
All trees	70.2	70.9	62.9	69.3	77.0	74.9

Table 30. — Number of growing-stock and rough and rotten trees 1.0–4.9 inches d.b.h. per acre, by forest type and Survey Unit, Virginia, 1977

Forest type	State	Survey Unit				
		Coastal Plain	Southern Piedmont	Northern Piedmont	Northern Mountain	Southern Mountain
	Number of trees					
White pine-hemlock						
Growing stock	265		333	851	267	182
Rough and rotten trees	203	–	200		356	147
All trees	468		533	851	623	329
Loblolly-shortleaf pine:						
Growing stock	466	478	496	499	198	279
Rough and rotten trees	317	374	257	234	373	318
All trees	783	852	753	733	571	597
Oak-pine:						
Growing stock	323	329	415	340	206	195
Rough and rotten trees	437	474	465	320	398	410
All trees	760	803	880	660	604	605
Oak-hickory:						
Growing stock	190	222	216	213	127	162
Rough and rotten trees	407	430	456	310	448	378
All trees	597	652	672	523	575	540
Oak-gum-cypress:						
Growing stock	152	152	167	100		
Rough and rotten trees	477	487	167	300		
All trees	629	639	334	400		
Elm-ash-cottonwood:						
Growing stock	106	123	90	179	33	67
Rough and rotten trees	286	427	263	157	222	167
All trees	392	550	353	336	255	234
Maple-beech-birch:						
Growing stock	133				75	144
Rough and rotten trees	233				325	217
All trees	366		–	–	400	361
All types:						
Growing stock	266	315	312	288	142	170
Rough and rotten trees	387	425	391	291	430	363
All trees	653	740	703	579	572	533

Table 31. – Area of commercial forest land, by stand volume (board feet) and ownership classes, by physiographic classes, Virginia, 1977

Ownership class and stand volume per acre[1] (board feet)	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sand-hills	Other misc. classes
					Acres					
National Forest:										
Less than 1,500	475,415	-	-	7,515	413,166	-	-	50,247	–	4,487
1,500 to 5,000	608,024	-	-	7,806	515,959	-	–	64,938	–	19,321
More than 5,000	374,550	-	-	-	343,156	-	-	20,789	–	10,605
All classes	1,457,989	–	-	15,321	1,272,281	-	-	135,974	–	34,413
Other public:										
Less than 1,500	201,476	542	4,444	3,191	70,199	23,492	-	96,467	–	3,141
1,500 to 5,000	116,880	-	175	3,867	45,610	9,590	-	54,703	–	2,935
More than 5,000	179,585	-	1,627	20,628	14,241	25,655	-	117,434	-	-
All classes	497,941	542	6,246	27,686	130,050	58,737	-	268,604	–	6,076
Forest industry:										
Less than 1,500	891,780	-	6,041	10,504	54,703	276,540	-	529,157	–	14,835
1,500 to 5,000	396,418	–	2,975	24,533	51,260	89,818	2,590	222,596	–	2,646
More than 5,000	381,420	-	5,281	25,105	30,034	163,182	-	157,173	–	645
All classes	1,669,618	–	14,297	60,142	135,997	529,540	2,590	908,926	–	18,126
Farmer and misc. private:										
Less than 1,500	4,387,182	11,989	17,998	184,473	906,881	552,891	18,736	2,643,632	–	50,582
1,500 to 5,000	4,966,291	17,744	53,680	198,129	1,380,231	474,946	3,106	2,760,153	–	78,302
More than 5,000	2,993,772	8,987	46,328	156,937	734,117	611,642	3,106	1,367,419	–	65,236
All classes	12,347,245	38,720	118,006	539,539	3,021,229	1,639,479	24,948	6,771,204	–	194,120
All ownerships:										
Less than 1,500	5,955,853	12,531	28,483	205,683	1,444,949	852,923	18,736	3,319,503	–	73,045
1,500 to 5,000	6,087,613	17,744	56,830	234,335	1,993,060	574,354	5,696	3,102,390	–	103,204
More than 5,000	3,929,327	8,987	53,236	202,670	1,121,548	800,479	3,106	1,662,815	–	76,486
All classes	15,972,793	39,262	138,549	642,688	4,559,557	2,227,756	27,538	8,084,708	–	252,735

[1] International ¼-inch rule.

Table 32. – Area of commercial forest land, by stand volume (cubic feet) and ownership classes, by physiographic classes, Virginia, 1977

Ownership class and stand volume per acre[1] (cubic feet)	All classes	Physiographic class								
		Deep swamps	Broad stream margins	Narrow stream margins	Mountain tops and slopes	Flatwoods and dry pocosins	Bays and wet pocosins	Rolling uplands	Sand-hills	Other misc. classes
					Acres.					
National Forest:										
Less than 500	229,774		–	7,515	190,675	–	–	31,584	–	–
500 to 1,000	367,439		–	5,364	336,744	–	–	25,331	–	–
More than 1,000	860,776		–	2,442	744,862			79,059	–	34,413
All classes	1,457,989	–	–	15,321	1,272,281	–	–	135,974	–	34,413
Other public:										
Less than 500	141,676	542	4,444	3,226	50,734	21,082	–	61,307	–	341
500 to 1,000	81,389		–		41,625	875	–	35,708	–	3,181
More than 1,000	274,876	–	1,802	24,460	37,691	36,780	–	171,589	–	2,554
All classes	497,941	542	6,246	27,686	130,050	58,737	–	268,604	–	6,076
Forest industry:										
Less than 500	641,373		6,041	2,305	33,585	206,358	–	385,686	–	7,398
500 to 1,000	268,309	–	–	5,815	46,689	67,476	2,590	138,302	–	7,437
More than 1,000	759,936	–	8,256	52,022	55,723	255,706	–	384,938	–	3,291
All classes	1,669,618	–	14,297	60,142	135,997	529,540	2,590	908,926	–	18,126
Farmer and misc. private:										
Less than 500	2,422,792	6,016	16,825	124,726	408,544	367,625	18,736	1,455,523	–	24,797
500 to 1,000	2,753,588	9,044	22,891	109,040	808,836	268,112	3,106	1,494,460	–	38,099
More than 1,000	7,170,865	23,660	78,290	305,773	1,803,849	1,003,742	3,106	3,821,221	–	131,224
All classes	12,347,245	38,720	118,006	539,539	3,021,229	1,639,479	24,948	6,771,204	–	194,120
All ownerships:										
Less than 500	3,435,615	6,558	27,310	137,772	683,538	595,065	18,736	1,934,100	–	32,536
500 to 1,000	3,470,725	9,044	22,891	120,219	1,233,894	336,463	5,696	1,693,801	–	48,717
More than 1,000	9,066,453	23,660	88,348	384,697	2,642,125	1,296,228	3,106	4,456,807	–	171,482
All classes	15,972,793	39,262	138,549	642,688	4,559,557	2,227,756	27,538	8,084,708	–	252,735

[1] Growing-stock volume.

Table 33. – Average net volume and growth per acre on commercial forest land, by physiographic class, tree class, and species group, Virginia, 1977

Physiographic class and tree class	Net volume per acre						Net growth per acre					
	Softwood		Hardwood		Total		Softwood		Hardwood		Total	
	Cubic feet	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*	*Cubic feet*	*Board feet*
Deep swamps:												
Growing stock	170.7	757	1,217.4	2,700	1,388.1	3,457	5.0	32	65.3	111	70.3	143
Rough and rotten trees	–	–	657.8	–	657.8	–	–	–	17.9	–	17.9	–
Total	170.7	757	1,875.2	2,700	2,045.9	3,457	5.0	32	83.2	111	88.2	143
Broad stream margins:												
Growing stock	283.1	1,368	1,265.9	3,863	1,549.0	5,231	7.8	51	44.6	152	52.4	203
Rough and rotten trees	14.6	–	420.5	–	435.1	–	0.1	–	9.1	–	9.2	–
Total	297.7	1,368	1,686.4	3,863	1,984.1	5,231	7.9	51	53.7	152	61.6	203
Narrow stream margins:												
Growing stock	98.9	414	1,233.5	3,737	1,332.4	4,151	2.7	15	42.6	162	45.3	177
Rough and rotten trees	2.6	–	315.0	–	317.6	–	–	–	7.7	–	7.7	–
Total	101.5	414	1,548.5	3,737	1,650.0	4,151	2.7	15	50.3	162	53.0	177
Mountain tops and slopes:												
Growing stock	131.2	429	1,069.0	2,873	1,200.2	3,302	4.0	15	37.9	131	41.9	146
Rough and rotten trees	11.2	–	349.0	–	360.2	–	0.1	–	6.7	–	6.8	–
Total	142.4	429	1,418.0	2,873	1,560.4	3,302	4.1	15	44.6	131	48.7	146
Flatwoods & dry pocosins:												
Growing stock	721.2	2,659	691.7	1,890	1,412.9	4,549	29.3	126	30.9	102	60.2	228
Rough and rotten trees	6.2	–	117.7	–	123.9	–	0.1	–	3.3	–	3.4	–
Total	727.4	2,659	809.4	1,890	1,536.8	4,549	29.4	126	34.2	102	63.6	228
Bays and wet pocosins:												
Growing stock	401.9	1,739	64.0	98	465.9	1,837	10.1	48	5.5	5	15.6	53
Rough and rotten trees	6.1	–	145.7	–	151.8	–	–	–	6.9	–	6.9	–
Total	408.0	1,739	209.7	98	617.7	1,837	10.1	48	12.4	5	22.5	53
Rolling uplands:												
Growing stock	389.5	937	794.6	2,041	1,184.1	2,978	19.8	56	35.6	120	55.4	176
Rough and rotten trees	14.2	–	133.7	–	147.9	–	0.5	–	4.0	–	4.5	–
Total	403.7	937	928.3	2,041	1,332.0	2,978	20.3	56	39.6	120	59.9	176
Sandhills:												
Growing stock	–	–	–	–	–	–	–	–	–	–	–	–
Rough and rotten trees	–	–	–	–	–	–	–	–	–	–	–	–
Total	–	–	–	–	–	–	–	–	–	–	–	–
Other misc. classes:												
Growing stock	227.1	793	1,051.9	2,827	1,279.0	3,620	7.3	35	38.9	136	46.2	171
Rough and rotten trees	15.2	–	252.4	–	267.6	–	0.6	–	6.9	–	7.5	–
Total	242.3	793	1,304.3	2,827	1,546.6	3,620	7.9	35	45.8	136	53.7	171
All classes:												
Growing stock	345.1	1,010	885.5	2,356	1,230.6	3,366	15.5	52	36.1	123	51.6	175
Rough and rotten trees	11.7	–	206.7	–	218.4	–	0.3	–	5.0	–	5.3	–
Total	356.8	1,010	1,092.2	2,356	1,449.0	3,366	15.8	52	41.1	123	56.9	175

Table 34. – Land area, by class, major forest type, and survey completion date, 1957, 1966, and 1977

Land use class	Survey completion date			Change 1966–1977
	1957	1966[1]	1977	
	Acres			
Forest land:				
Commercial forest land:				
Pine and oak-pine types	5,909,400	5,523,492	5,369,114	-154,378
Hardwood types	9,540,500	10,300,856	10,603,679	+302,823
Total	15,449,900	15,824,348	15,972,793	+148,445
Noncommercial forest land:				
Productive-reserved	259,400	313,427	374,561	+ 61,134
Unproductive	404,200	216,292	70,025	-146,267
Total	663,600	529,719	444,586	- 85,133
Nonforest land:				
Cropland	4,650,000	3,607,794	3,098,623	-509,171
Pasture and range	3,506,200	3,593,906	3,641,844	+ 47,938
Other	1,137,200	1,831,039	2,138,656	+307,617
Total	9,293,400	9,032,739	8,879,123	-153,616
All land[2]	25,406,900	25,386,806	25,296,502	- 90,304

[1] These figures differ slightly from reported figures because of revisions in the estimates of land area.
[2] Excludes all water areas.

Table 35. – Volume[1] of sawtimber, growing stock, and all live timber on commercial forest land, by species group, diameter class, and survey completion date

Species group	Year	All classes	Diameter class (inches at breast height)								
			5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0 and larger
		SAWTIMBER (In thousand board feet)									
Softwood	1957	13,797,941			3,621,608	3,601,330	1,624,848	1,625,019	958,065	630,883	736,188
	1966	13,930,530			3,551,533	3,349,256	2,690,420	1,804,908	1,174,143	678,496	681,774
	1977	16,134,085			3,977,471	3,977,022	3,169,631	2,130,089	1,308,303	695,950	875,619
Hardwood	1957	26,557,643				5,324,704	5,705,776	4,550,157	3,621,421	2,405,595	4,949,990
	1966	29,073,386		–		5,818,694	6,135,760	5,081,083	3,835,109	2,620,214	5,582,526
	1977	37,636,550				7,350,314	7,927,327	6,943,207	5,200,926	3,524,597	6,690,179
		GROWING STOCK (In thousand cubic feet)									
Softwood	1957	5,038,377	823,515	1,147,980	1,025,844	830,012	528,064	298,495	164,462	104,231	115,774
	1966	4,838,852	706,729	1,060,204	1,005,983	772,287	541,392	331,670	201,989	111,684	106,914
	1977	5,512,096	791,755	1,162,673	1,126,535	919,437	640,416	392,379	225,996	115,062	137,843
Hardwood	1957	10,260,211	1,005,188	1,399,532	1,613,006	1,594,038	1,446,448	1,036,690	767,113	483,972	914,224
	1966	11,318,573	1,214,068	1,550,268	1,723,582	1,742,190	1,556,412	1,158,940	812,005	527,692	1,032,416
	1977	14,144,364	1,288,857	1,827,309	2,176,969	2,202,011	2,011,847	1,586,130	1,102,065	710,131	1,239,045
		ALL LIVE TIMBER (In thousand cubic feet)									
Softwood	1957	5,196,046	876,815	1,194,342	1,055,753	845,846	533,049	301,299	165,961	104,575	118,406
	1966	4,998,173	759,144	1,106,016	1,037,306	788,097	546,969	334,877	203,940	112,101	109,723
	1977	5,699,650	847,959	1,215,524	1,165,270	940,195	648,256	396,979	228,458	115,587	141,422
Hardwood	1957	12,640,786	1,461,214	1,845,796	1,992,167	1,879,516	1,652,031	1,176,221	887,096	573,673	1,173,072
	1966	14,010,778	1,773,230	2,049,307	2,132,625	2,059,508	1,781,818	1,319,294	937,814	627,538	1,329,644
	1977	17,445,647	1,880,668	2,415,752	2,701,244	2,609,214	2,307,473	1,811,697	1,273,081	844,304	1,602,214

[1] To provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used previous surveys.

Table 36. — Volume of all live timber, by species group and Survey Unit, Virginia, 1957, 1966, and 1977

Species group and Survey Unit	1957	1966	Change 1957–1966	1977	Change 1966–1977
	Thousand cu. ft.	*Thousand cu. ft.*	*Percent*	*Thousand cu. ft.*	*Percent*
Softwood:					
Coastal Plain	2,674,960	2,452,968	- 8.3	2,415,647	- 1.5
Southern Piedmont	1,281,926	1,191,258	- 7.1	1,449,889	+21.7
Northern Piedmont	561,529	573,034	+ 2.0	756,986	+32.1
Northern Mountain	406,378	453,990	+11.7	590,082	+30.0
Southern Mountain	271,253	326,923	+20.5	487,046	+49.0
All units	5,196,046	4,998,173	- 3.8	5,699,650	+14.0
Hardwood:					
Coastal Plain	3,403,081	3,525,488	+ 3.6	3,808,100	+ 8.0
Southern Piedmont	2,403,287	2,576,027	+ 7.2	3,284,391	+27.5
Northern Piedmont	2,113,692	2,293,885	+ 8.5	2,959,566	+29.0
Northern Mountain	2,224,898	2,607,881	+17.2	3,325,700	+27.5
Southern Mountain	2,495,828	3,007,497	+20.5	4,067,890	+35.3
All units	12,640,786	14,010,778	+10.8	17,445,647	+24.5

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Keywords: Commercial forest area, ownership class, timber volume, timber growth, timber removals.

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